Pulp and Paper Prices Due to Advance

THE business record for the first six months of 1925 is before us. The outstanding features are: first, the large volume of general business done; second, the paucity of profits in most divisions of industry, particularly the paper industry; and, third, the certainty of a still larger volume of business indicated by a world-wide price advance in all staple commodities.

The large volume of general business is shown by the greatly increased volume of check transactions and bank clearances, which are running fully 20 per cent higher than for the same periods in 1924, and also in the marked increase in revenue freight car loadings. These car loadings are very significant and deserve at least a brief analysis.

The total loadings for the first six months of the year were 23,306,287 cars. The total loadings for the corresponding period of 1924 were 22,276,901 cars—an increase of 1,029,386. This is only up to and including the week of June 20th—an average of about 24,900 cars per week for the first 24 weeks. But that does not reflect the real rapid rise in volume tonnage which we consider significant, for in the first quarter of the year, January, February and March, the increase car loadings were only 122,000 more than for the same period of 1924, or an average weekly increase of only 10,167 cars over the same period of 1924. Whereas, for the second quarter, April, May and up to June 20th, the total increase car loadings over the corresponding period of 1924 was 907,386 cars, or a weekly average increase of 75,615 cars over the same corresponding weeks in 1924. In fact, the big upturn in business volume began in the second quarter of the year and is now continuing to still further increase as shown by the car loadings of the week ending June 20th, which were 982,600 cars—an increase of 79,054 cars more than the same week in 1924. This in turn indicates that the latest reports show business volume is not only sustained at the average but the week of June 20th went 4,000 cars more than the average for the past three months.

The outlook for the third quarter of the year promises still greater volume of business, and the wind-up of the year will result in a garrison finish. The year 1925 started on low, is now in intermediate and will finish on high.

Now in spite of the high volume of tonnage during the past three months there has been bitter complaint in some divisions of industry, particularly the paper industry, due to the fact that the large volume of tonnage showed low or no profits. The reason, so far as concerns the paper industry, is not hard to find. It is due to over-production and intensive sales competition. The over-production was principally occasioned by the excessive importation of both pulps and paper into this market from the great pulp and paper producing nations of northern Europe, which during the years of 1922, 1923 and 1924 had no other place to ship their wood products but to the United States. This heavy influx of cheap raw material and finished paper from abroad, added to the already large production in the United States and Canada, served to keep the paper market in an intensive competitive condition from 1922 up to the present time. This adverse situation has been further aggravated by the adoption, on the part of a number of weak-kneed, spineless mill managers and sales managers, of the foolish policy of trying to stimulate sales by cutting qualities and cutting prices. What this policy did was to cut profits for everybody concerned in the production and distribution of paper. The correct remedy was to cut production to fit consumption, but it takes courage, grit and sound knowledge to shut mills down. The price-cutter hasn't that brand of virtue; he commits commercial suicide and assassinates every one else in the industry besides.

However, he has always been with us and always will be, and it's our problem to succeed in spite of him, as we will! To illustrate how baneful was the effect of the excessive imports, let us point to the records:

In 1922, when it cost domestic producers of sulphate pulp $80 a ton to produce, the Scandinavian producers pressed excessive amounts on the market at $40 a ton, not because they could make pulp any cheaper than the American producer but because they had to have the money, exchange was in their favor, and finally because there was no other place where they could market their wood products except in the United States.

Here is what they did: In 1921 they exported 185,000 tons of sulphate pulp into this country; in 1922 they sent in 396,000 tons—an increase in one year of 114 per cent, or an amount equal to the production of 14 mills producing 50 tons a day apiece for 300 days in the year. They forced this enormous increased tonnage on this market in one year by drastic cuts in price.

In 1921, 733,000 tons of sulphite pulp were imported into this country; in 1922, 1,230,000 came in—an increase of almost 70 per cent in one year, or an amount equal to the production of more than 33 mills producing 50 tons apiece per day for 300 days in the year.

This abnormal, excessive importation of pulps was forced on our market via the price cut method. In 1923 the same tactics were pursued until in the spring of 1924 there was scarcely a sulphate or sulphite mill in operation in the eastern part of the United States. They were all closed down; and three sulphate mills with a daily capacity of 150 tons ceased operations and were finally dismantled. It was this excessive importation of both pulps and papers from abroad that produced the break in paper prices in the fall of 1923. This sick and failing paper market condition continued throughout 1924 and has hung over during the first six months of 1925. But a change in fundamental conditions in the paper industry has occurred.

Europe and the rest of the world has come back. The pulp and paper producers of northern Europe are experiencing a returned demand for their pulps and papers from all their former customers in other parts of the world. The continent of Europe is buying wood pulp and paper supplies in larger and ever increasing volume. England alone is reported to be taking 70 per cent of Sweden's Kraft paper output. Germany a year ago was selling newsprint to some American publishers at prices far below American quotations; today Germany's newsprint in rolls is

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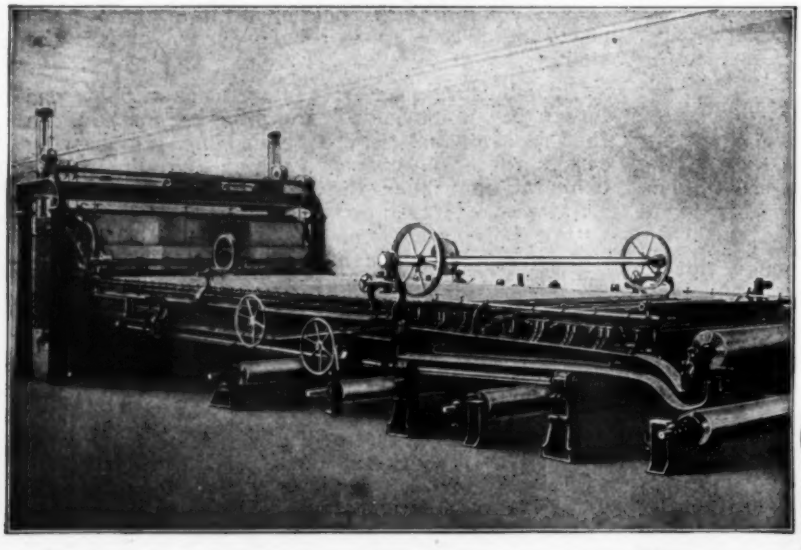

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It requires an average of ten men to change a wire on old-type Fourdriniers, and four hours' time in making the change, 40 man-hours all told against five men on the "Beloit," working only an hour. 5 man-hours against 40, a saving of 35 man-hours per change.

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Bulletin No. 9 gives further facts Send for it

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quoted at $3.61 and for sheets $3.72 per cwt., f. o. b. Germany. Paper imports, due to the rising costs in Europe, to the increased demand from the world buyers, and to the splendid activities of the Import Committee of the American Pulp & Paper Association, have declined signally, and are becoming negligible compared with receipts of a year ago.

Pulp imports have fallen markedly and are due for further drastic curtailment except only that American converters pay materially higher prices than other world consumers.

In 1924 the total sulphite pulp imports for the year fell off to 788,577 tons—a decrease of 441,423 tons under the total sulphite pulp imports of 1922. In 1924 the imports of sulphate pulp dropped to 351,493 tons—a decrease of 44,507 tons under the total of 1922. And 1925 will show a still further curtailment of all classes of wood pulp imports, save only mechanical pulp.

The next change in the situation is a come-back in pulp and paper prices. That is on the way now, and can be set down as a definite certainty because there exists today a world-wide price advance in all staple commodities. Read the following and get the point:

"Data on international trade compiled by the National City Bank of New York shows that the advance in prices is world wide, all staples of the principal countries of the world being higher in 1925 than in 1924." That applies to pulps and paper as well as other commodities.

Raw materials and basic staple commodities are staging a drastic come-back in price. Fibres of all kinds are away up in the air. Hemps have all gone higher and some have made perpendicular advances, especially jutes, which advanced about 100 per cent ninety days ago, and Italian hemps, which in 1913 were considered high at 10c per lb., are now commanding 25c per lb. All plant fibres are very high in price; the only cheap fibres, in fact the cheapest on earth, are the wood pulp fibres, and the world's fabric makers are turning rapidly to the use of them. To illustrate: Bleached sulphite has been a drag on the paper market at around 4c per lb., but within the last six months the Scandinavian producers have sold some 65,000 tons to the manufacturers of "Rayon" or artificial silk. As a consequence, bleached sulphite pulps have firmed up and show an advance of from $5 to $8 per ton. In this country, 20,000 tons of artificial silk has been produced, mostly made from cotton fibre. The difference in cost between cotton fibre at 25c and bleached sulphate at 4½c or 5c per lb. makes it certain that the American producer of Rayon must go to the bleached sulphite fibre. In fact, it is already announced that a combination of German machines and American capital has been effected for the purpose of producing artificial silk in the United States on a large scale from bleached sulphite fibres. Increased quantities of sulphite papers and fibres are being used in the manufacture of commodities formerly made from wood, cotton, wool, tin and iron. The same is true of sulphate fibres. Furniture, clothing, substitutes for burlaps, jute and hemp fibre commodities all are being produced today from choice sulphate fibres in increasing quantities. Wood fibres have won a large place in manufacture of fabrics in this country as well as the rest of the world, and the demand for them is on the substantial upturn. They are headed for a substantial come-back in price.

The "hand to mouth" purchasing policy which has been in vogue for the past year, is due to get a severe jolt in the paper industry. It got a corking wallop in the rubber industry, for rubber, like pulp and paper, took a perpendicular plunge downward in price after the collapse of the 1920 inflation. Consumers refused to buy; stocks were liquidated thoroughly. A year ago rubber was selling at 17c per pound. Buyers adopted a hand-to-mouth policy, and it was freely predicted that the old days of volume buying would never return. Today rubber is selling at 80c per pound and buyers who were "not interested" at 17c are yelling lustily for it at top prices and aiding in putting it up to a dollar a pound.

Note the following excerpt culled from a current market report: "Large automobile manufacturers, who have been caught short of rubber, admit that this is one of the cases where the 'hand-to-mouth' buying now being practiced by this country as a whole in all lines of trade has worked out badly." It certainly has! And it will work out badly in the paper trade also.

But some wise bird arises to say, "Yes, but the rise in rubber is due to the fact that it is controlled by foreigners." Righto, old top! The United States consumes 70 per cent of the world production of rubber, and most of it is supplied us by foreigners who can and do control supplies. But 60 per cent of the world's production of paper is consumed in the United States, and over 50 per cent of our raw pulp and paper supplies are in the control of foreigners.

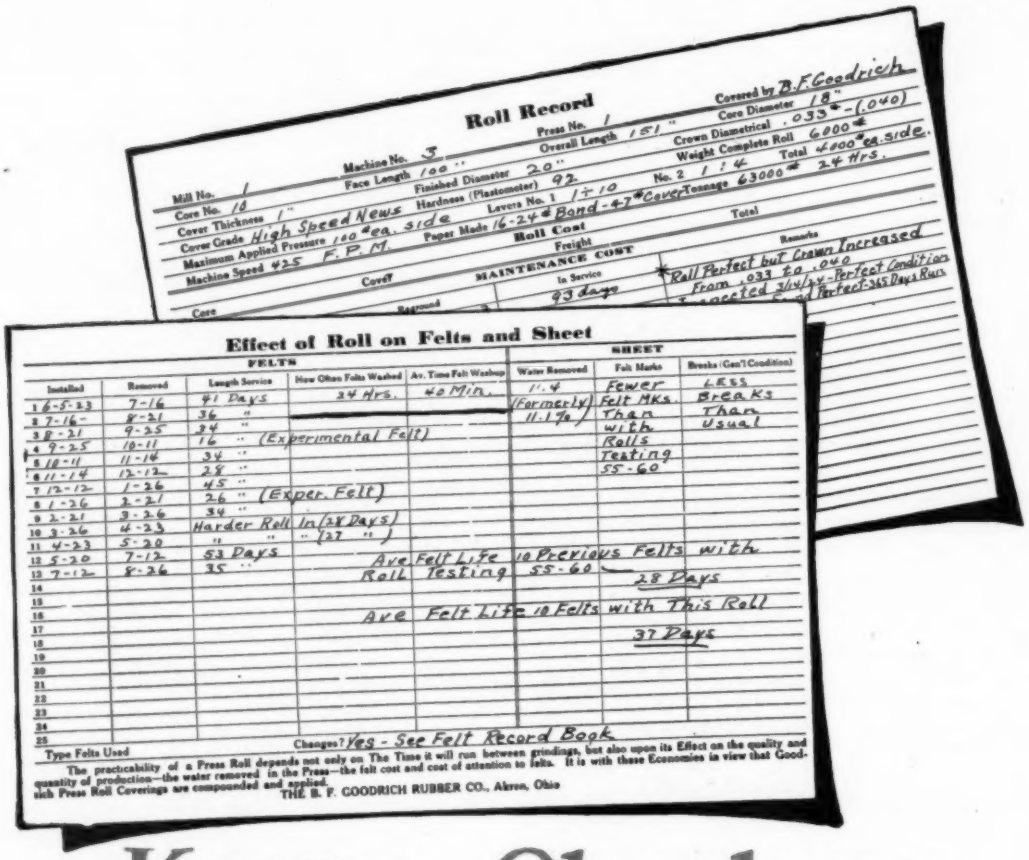
Don't let the significance of this parallel escape you. Already these foreigners are putting prices of raw materials higher. Sulphate pulp which a year ago was selling freely at $50 to $52 per ton, ex dock New York, is now selling at $60 to $64 per ton ex dock, a 20 per cent advance already and more to come, because the American converters of sulphate and sulphite pulps are not covered for next winter's needs. They must buy at new and higher levels, and that means new and higher prices for wood pulp products.

Stocks of paper in the hands of consumers, retailers and jobbers have been thoroughly liquidated. There are no stocks of chemical pulps either on docks at coast points in this country, nor at mills in northern Europe. The world's demand for wood pulp products is rapidly expanding. The period of replenishment is at hand. Consumers of paper can shut their eyes, invest heavily in paper, and make money by doing it.

Observations of a Traveler—II

IN OUR contact with plants and individuals in the papermaking districts of New England, the impression was gained that paper production had fallen off to some extent as a consequence of lessened demand, but with regard to chemical pulp mills production was being maintained at full capacity, and this notwithstanding a steady increase in importations of chemical pulps from Scandinavian countries.

We are so accustomed to think of sulphite pulp in its relation to paper manufacture that we are apt to be somewhat astonished when we hear of other rapidly growing uses for the product. That all of the sulphite pulp either of domestic or foreign manufacture is not used in the manufacture of paper is now becoming fairly well known, but it takes talks with textile manufacturers such as are to be met in a textile center like Providence to bring the matter



Roll Record

Mill No. 1 — Machine No. 3 — Press No. 1 — Covered by B.F.Goodrich
Core No. 10 — Face Length 100" — Overall Length 151" — Core Diameter 18"
Cover Thickness 1" — Finished Diameter 20" — Crown Diametrical .033"-(.040)
Cover Grade High Speed News — Hardness (Plastometer) 92 — Crown Diametrical Roll 6000#
Maximum Applied Pressure 150#ea. side — Levers No. 1 1÷10 — No. 2 1 : 4 — Weight Complete Roll Total 4000#ea.side.
Machine Speed 425 F.P.M. — Paper Made 16-24# Bond-47#Cover-Tonnage 63000# — 24 Hrs.

Core — Covers — Reground — Roll Cost — Freight — Total — MAINTENANCE COST — In Service — 93 days — Remarks — Roll Perfect but Crown Increased From .033 to .040 Accepted 3/14/24-Perfect Condition Perfect-345 Days Run

Effect of Roll on Felts and Sheet

FELTS					SHEET		
Installed	Removed	Length Service	How Often Felts Washed	Av. Time Felt Washup	Water Removed	Felt Marks	Breaks (Gen'l Condition)
1 6-5-23	7-16	41 Days	24 Hrs.	40 Min.	11.4	Fewer	LESS
2 7-16-	8-21	36 "			(Formerly	Felt Mks.	Breaks
3 8-21	9-25	34 "			11.1%)	Than	Than
4 9-25	10-11	16 " (Experimental Felt)				with	Usual
5 10-11	11-14	34 "				Rolls	
6 11-14	12-12	28 "				Testing	
7 12-12	1-26	45 "				55-60	
8 1-26	2-21	26 " (Exper. Felt)					
9 2-21	3-26	34 "					
10 3-26	4-23	Harder Roll In (28 Days)					
11 4-23	5-20	" " " (27 ")					
12 5-20	7-12	53 Days		Ave Felt Life	10 Previous Felts with		
13 7-12	8-26	35 "		Roll Testing	55-60	28 Days	
14							
15				Ave	Felt Life 10 Felts with This Roll		
16						37 Days	
17							
18							
19							
20							
21							
22							
23							
24							
25							

Type Felts Used — Changes? Yes - See Felt Record Book

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home to those who are interested chiefly in the pulp and paper industry.

Pulp and paper manufacturers have wondered why in face of recent heavy receipts of Swedish pulp in this market, the price of this fiber is maintained on a steady basis. For the first three months of 1925, there was an increase of nearly 50 per cent in importations as compared with the same period for 1924, and the figures for June, 1925, as compared with June, 1924, indicate no diminution in the rising volume of supplies from foreign sources. The explanation is that larger and larger amounts of sulphite pulp are passing into other channels of consumption than paper manufacture, rayon taking the greater proportion.

At the Chemical Equipment Exposition held in Providence last month under the auspices of the Association of Chemical Equipment Manufacturers, a display of contrivances made of the rarer metals like platinum and iridium, and called "spinnerets," attracted attention. These are used to form the thread of artificial silk, a solution of cellulose being forced through them while they are immersed in a vat of acid solution or other precipitating medium. Later on we visited the interesting commercial museum maintained by Dr. Arthur D. Little at the laboratories of A. D. Little, Inc., Cambridge, Mass., and there saw a case filled with silks and photographic and cinema films, the raw material of which was mostly chemical wood pulps. That attention is being directed to the development of new materials, either for papermaking or related industries, was seen in the activities of the paper laboratory which was in full operation, with work being conducted on the pulping of sawgrass and certain hardwoods.

The development of the artificial silk industry is going to entail a heavy drain on sources of chemical pulps and this furnishes a cogent argument for the scientific operation of woodlands, if we are to have a continuing supply of pulpwood.

In walks and talks with managers and superintendents of mills in New England pulp and paper centers, one becomes aware of changes in course of progress that are already affecting to some extent the character of the fine paper industry in Holyoke and surrounding country. The increasing use of wood to the displacement of rag in the manufacture of numerous varieties of writing and record papers is at the root of these changes, but new and improved methods of management, production and distribution have also operated to promote altered conditions.

There are possibilities existing in undeveloped plants along the Connecticut river for a great expansion of industry, but it would take large investments of capital to reconstruct old plants and undertake the creation of new projects in line with modern developments before things are different.

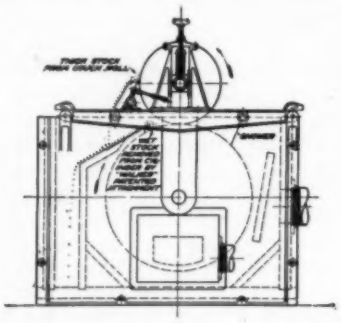
To the east and north of the Connecticut river lie the States of New Hampshire and Maine. In these States men of forward vision and laudable ambition have created great manufacturing plants for pulp and paper, Maine being first among the States of the Union as regards amount of capital invested and value of product in the pulp and paper industry. At Bangor is the headquarters of the Northeastern Division of the American Pulp and Paper Mill Superintendents' Association which draws on four States for its membership, Maine men predominating, with New Hampshire, Massachusetts and Vermont represented in the order named. The secretary of the division is professor of pulp and paper technology at the University of Maine; the chairman is superintendent of the largest fine paper mill in eastern New England, a man who is noted for the application of modern methods to mill work in the manufacture of high-class papers.

As in some of the mills operating in the northwestern sections of the country, the influence of the State University in Maine is exerted in different ways to maintain good standards of industrial relations and for the stimulation of research and experimentation looking to improved methods of production and new uses for paper. In this respect our friends on the Penobscot river are greatly to be felicitated.

Picture to yourselves the president of the State University sitting in with a group of superintendents and discussing with them the management of mills and colleges! This is what President Clarence C. Little of the University of Maine did at the dinner which concluded the semi-annual meeting of the Northeastern Superintendents' Association in Bangor a fortnight ago.

Dr. Little is a fine type of university president. Abounding in youth and enthusiasm, he is for building up new and more satisfactory relations between employers and employees through attention to the housing of workers and furnishing medical attention and increased educational facilities for the children of those employed in the mills. The boys and girls of a community or State are to President Little its chief resources. They have in them the elements which render it possible, he says, to make of them as a group, the conscience of the nation. Hence his insistence in urging millowners to provide increased educational facilities in mill communities, since he was convinced that if, in dealing with their workpeople, they would see that their children had a good education and good doctors, they would hold them in the face of labor disturbances.

Untold wealth exists in Maine's vast extent of forest land, covering some fifteen million acres, mostly pulpwood, though hardwood growths are also abundant. In this connection, a Maine institution of which the State has reason to be proud is the Great Northern Paper Company. Located on the west branch of the Penobscot at Millinocket, this firm owns vast stretches of timber, the cutting of which is regulated according to the most approved principles of scientific forestry. Every time a tree is cut another one is planted, thus assuring a continuous supply, the ambition of all good timberland owners. The Great Northern Paper Company cut 325,000 cords of pulpwood last season, the major portion of which was taken from Penobscot lands. This is more than the total log cut for all purposes of this river in the latter days of the saw mills' activity when Bangor was famous as a port for the export of lumber. Prior to the rise of the pulp and paper industry in Maine, the small independent loggers cut over an area and left no stick standing; forests of stumps replaced stands of giant trees. The Great Northern Paper Company has ended that with the practice of afforestation. Along the Penobscot wood is still cut but it reaches the pulp mills instead of the sawmills. And as the spruce and fir stands in the State are estimated at twenty-five and a half billions of feet and the annual cut of all kinds of lumber is approximately but one billion feet, it will be seen that Maine yet has some resources to fall back upon.



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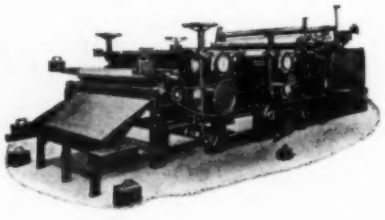

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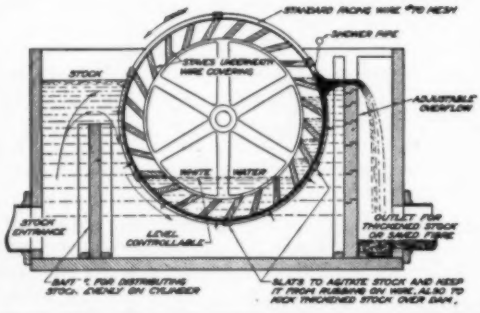

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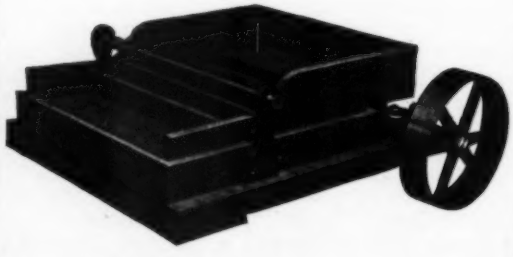

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Vol. 7 JULY, 1925 No. 4

Meeting the Growing Demand for Efficient Methods of Handling Material

By HAROLD J. PAYNE
Of the Staff of the Society for Electrical Development

AS THE Waste Committee of the Technical Association of the Pulp and Paper Industry accurately observes in concluding its recent report on material handling, "Human energy, in the last analysis, expresses itself in thinking and it is unintelligent to put it to use where its accomplishment is mainly measured in foot pounds." Such a statement gives a point of view on developments tending to conserve strength through increasing the capacity of the so-called unproductive workman mechanically, that is enlightening. There is no question that placing power equipment at the disposal of men who have previously pushed hand trucks, for instance, gives time and opportunity for constructive thought—and in one sense the benefits growing out of this change are as great as the dollars and cents return on which investment was originally justified.

A study of operations in any branch of the paper industry reveals that the maintenance of the proper flow of materials between succeeding steps in manufacture involves considerations of definite economic significance. Engineers designing mills at the present time are alive to the possibilities of paring production costs through proper layout and adequate equipment for linking up the series of operations that taken together constitute the process. Naturally, wet handling with pumps or by gravity is favored wherever there is a possibility of making efficient use of such means.

There still remain several handling problems for which a satisfactory solution requires the adoption of other mechanical equipment to which power may be applied. The Waste Committee of T. A. P. P. I. classifies the various types of machinery available as follows: hoisting, package handling, loose material conveying and elevating, general elevating, trackless transportation, industrial rail transportation, and special coast storage and handling. Two major groupings can be made out of this list, one comprising fixed equipment, the other equipment that owes flexibility to the fact that it is mobile. Generally in building a plant, the aim is to synchronize succeeding steps in process as far as possible and for this reason the fixed system of handling is properly favored to a large extent. Likewise in remodeling or otherwise introducing material handling equipment, there is much to be said for continuous conveyors, semi-stationary cranes, etc., wherever there is sufficient work to be done to keep such equipment in action the larger part of every working day.

There still remain many handling operations between varying points where the flow of material is more or less irregular. Also, there are cases in older plants where alterations to allow the use of fixed equipment become so expensive that some compromise with what appears to be the ideal solution of a problem is desirable. For such work, storage battery truck and tractor equipment has demonstrated its fitness by effecting decided economies over apparatus for which the motive power is human brawn.

What the Equipment Costs to Operate

Before discussing the applications made of industrial electrics in specific plants, it is worth while to consider the dollars and cents side of the question in a general way. The experience of a large number of present users indicates that the total daily cost of operation including depreciation, interest, maintenance and power—everything chargeable to the truck except the time of its operator—runs between $3.50 and $4.00 a day, averaging close to $3.50. A somewhat more detailed summary of costs is available,

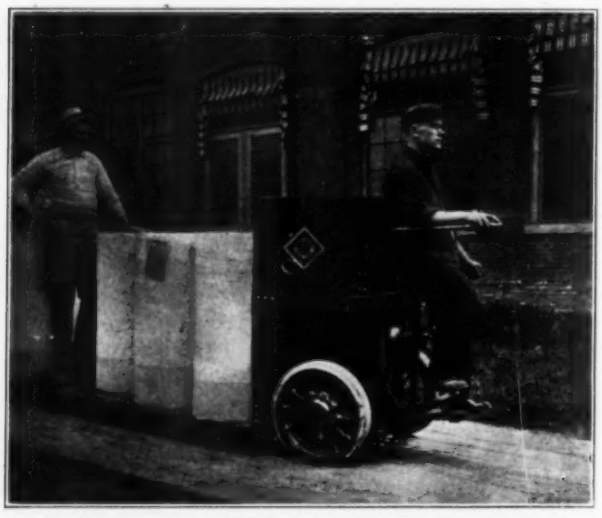
Illustrations—courtesy of S. E. D. Service.

based on the experience of a concern that was a pioneer in the use of equipment of this kind. The figures that follow have been carried down to include such relatively small items as a proportionate share of garage interest and depreciation, battery acid and water—in the composite a comprehensive lining up of all incidental as well as major costs, that are based on 300 8½ hour working days per year.

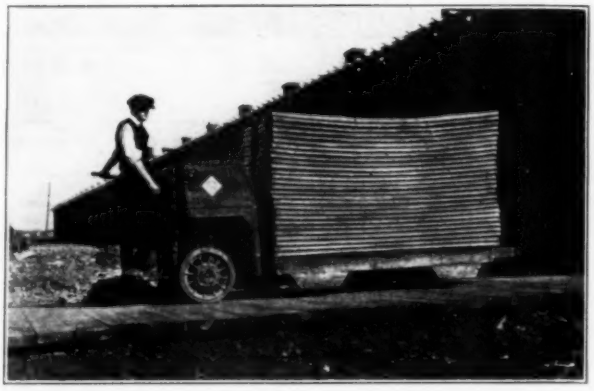
Type of Truck	Idle Time Cost	Working Time Cost
Heavy Industrial Tractor	.37	.80
Light Industrial Tractor	Never Idle	.38
Tier Lift Truck (2 ton)	.31	.43
Low Platform (2 ton) A*	.24	.49
Low Platform (2 ton) B*	.23	.46
One Ton Crane	.41	.76
Two Ton Crane	.22	.64

Costs that are available on the elevating platform type of truck, probably used more widely than any other in the paper industry, indicate a variation between .40 and .50 an hour as an average figure. One interesting observation that may be made on the above table is that in the case of the low platform trucks, data on two different makes are shown that are used in the same service, indicating the cost to be the same for practical purposes.

Aside from the tractor that is usually capable of pulling 10 to 15 tons on trailers, trucks of all types are designed with a carrying capacity of from 2 to 3 tons at a working speed of 4 to 7 miles an hour. While the low platform truck must be held for loading and unloading, the elevating platform and the tier lift are alike in that they carry skids previously loaded so that no idle time is required for handling. The skid system and the tractor-trailer system are alike in that the rehandling required is reduced to a minimum. Once a skid is loaded, as at the receiving platform, it need not be touched again until called for in process. Likewise, from point to point in the plant proper, the use of either of these systems eliminates all unnecessary rehandling. The finished product also lends itself well in many cases to storage on the carrier till time of shipment.



Passing now from generalities, a few of the many applications of storage battery equipment that have been made, may be mentioned. Certain of these apply only to older plants where the layout prevents the use of a co-ordinated system of fixed conveyors; others represent applications to operations that cannot be performed with equal economy by other equipment that is available at present.



For the first class of installations the handling of pulpwood from pond to grinders and the movement of broke baskets from dry end to beaters serve as illustrations. At one Maine mill, for instance, 2 trucks of the high lift type proved more satisfactory than cars running on an industrial railway, for carrying logs from pond to the battery of 8 pocket grinders. Formerly it was necessary to unload each car as it was brought in and then to handle the wood again as fed to the machines. With the present system, it is possible to eliminate rehandling altogether by placing skid loads of about 3,500 lbs. directly on the grinder platforms. Actually only one truck is kept operating at a time, the distance being only from 150 to 250 feet, the idea being to keep one battery constantly on charge without removing it from the truck chassis.

Several mills consider it feasible to move broke baskets with an elevating platform truck and when this operation simply constitutes a part of the machine's routine, it is undoubtedly an economical way of conducting the handling, especially where the broke has to travel a considerable distance to be returned to process. Both of these applications work out to greater advantage than doing the same work manually but in a modern mill, the fact remains that a beater for converting broke to slush is usually located under the dry end of the machines and the logs are floated directly into the grinder room. This is as it should be—the point is that when an older mill sets out to modernize its methods of material handling, the electric truck frequently provides a logical com-

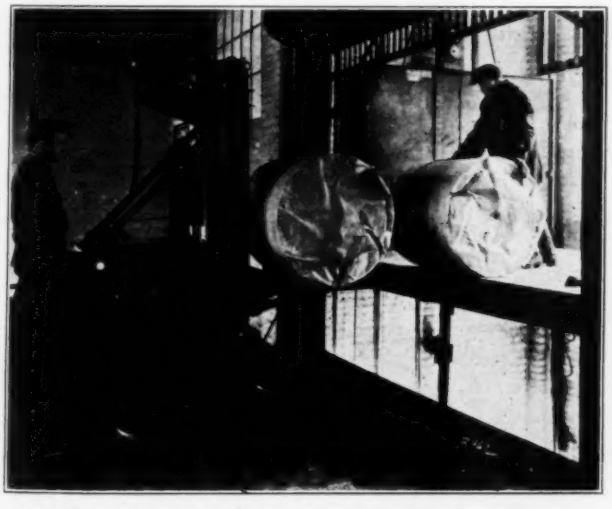
promise with the arrangement that would be adopted in a new mill.

Probably in warehouse service to a greater extent than in any other work, the storage battery truck has been accepted at its full value. That may account for the wide use made of the power truck in handling laps or rolls of pulp, bales of rags and other mill supplies. Incidentally, this application usually results in cutting down the number of carts required for moving materials due to the increased speed of the power equipment.

A modified fork type of truck has demonstrated fitness at the plant of one concern where several operations are required in finishing. Formerly a hand lift was used under small skids for moving loads from point to point. The present power equipment did not require the purchase of special platforms but picks up and carries the old ones with facility.

Recent modifications have proven of value in handling long and heavy rolls of newsprint—especially in hauls of considerable distance. In mills having a capacity of 100 tons or more, there is frequently sufficient handling to be done in the machine shop and in the plant by the millwright gang to justify placing of a power truck on the job. The adaptability of such equipment to different kinds of work—from spotting freight cars when a switcher is not available to running cable through conduits—is surprising.

A concrete illustration of performance is provided by the practice of Bird & Son, East Walpole, Mass., makers of the well known Neponset roofing products. At the mill where these trucks are used, the product



is finished on the floor below the shipping level. A large amount of it is stored in a warehouse connected by a 150 foot ramp to the shipping platform, with a 6 per cent up grade that has to be traveled by the trucks carrying shingles to storage.

The fleet of 6 elevating platform trucks does three things. Coating machines are supplied with heavy rolls of stock, the finished product is carried from the cutting machines to storage and thence back to railroad cars for shipment. A better idea of the performance of a single truck may be gained from the fact that in a trial test recently, in 9 hours and 40 minutes, 69 trips were made from the lower level, 300 feet, up one flight by elevator, then 300 feet by the ramp previously described to storage, carrying an average load of 4,500 pounds.

How the Trucking Is Organized

Most of the work done is by daily assignment. Usually 2 trucks are in service in the plant proper and 4 are used for loading. To carry on the latter operation, a 7 man gang has been found most efficient —consisting of two trucks with drivers, with 3 men in the car and 2 in the stock house. Formerly 5 man gangs were used; one truck with 2 men in the storehouse and 2 in the car. So much idle time resulted because of the length of the necessary run with the truck that it was decided to increase the speed of delivery by adding one additional truck, with one more man in the car to help in unloading and piling. It is interesting to note that the installation of trucks in this plant did not lessen the number of men on the payroll, but that five men with one power truck loaded 415 tons per week with a fraction of the effort that had previously been required to store away 265 tons using 2 hand trucks with 2 men to a truck. In other words, the installation of the electric industrials was part of the provision made for increasing production without adding to the number of workers necessary.

It is significant that the men like the power trucks extremely well and take great pride in keeping them in good running trim. Every Saturday afternoon they go over their machines, each man cleaning and lubricating his own truck. A mechanic works with the men at this time making a careful inspection of the equipment and repairing any trucks in the slightest need of such attention. Overhead on the six trucks, including repairs, maintenance, depreciation and interest, runs about $300 per month, or $50 per

unit. This works out to an average operating cost of close to 40 cents per hour. For this outlay the capacity of each of the truckers has been increased from 55 to 83 tons per week. In one day not long ago the loading gang handled a 26 car train, each car averaging 20 tons.

Beyond the elimination of the drudgery connected with this work, the trucks accomplish other objects held by every progressive executive. Congestion about elevators is greatly decreased, effective storage area is increased and the safety of workers is made increasingly secure. Despite its speed, the electric is definitely under control at all times and in an emergency can stop within its own length. Generally speaking, the portable power plant will go wherever hand trucks have gone in the past carrying 5 times the old load at 4 times the old speed.

Much progress has been made during the past 10 years in modernizing methods of material handling. Necessity for decreasing costs and elimination of wasteful use of human energy is ever present. The next decade may be expected to mark further long strides forward in increasing the capacity of the so-called unproductive worker. Nor is it too much to expect that in this development the type of equipment here discussed will play a significant part.

Water and Waste Water of the Paper Industry

By ARTHUR S. M. KLEIN
Berlin-Dahlem, Germany

REMOVAL of the dissolved impurities from water (iron, manganese, humic acids, etc.) is attended with great difficulty and requires a complicated apparatus. In general, such water comes in question as mill water only in exceptional cases. On the other hand, nearly every paper mill has water with so called colloidal dissolved substances. These occur as a disperse phase, the water being the dispersion medium, in which the suspended matter is distributed. The condition is an unstable one in which an alteration, due to the Brownian movement, occurs even on short standing, as, for example, in the forebay. Every condition of equilibrium which occurs thereafter in the course of time has a corresponding most favorable temperature. In most cases, it is merely a question of mechanically cleaning the water. This, however, can be assisted by chemical means, through the formation of a precipitate which carries down the suspended matter, or by alteration of the alkalinity of the water (increase or decrease). The removal of the precipitated, sedimented, or still suspended impurities of the water by filtration depends on the fact that the retaining material (sand, gravel, etc.) collects a layer of dirt, which then constitutes the real filtering element (initiation of filtration). The filtering action depends on the velocity of the water; the granulation of the material also plays a part, since even with very fine material alone a filtration is possible; but, on account of small capacity, a technically usable type of such fine grained filters (ultra filter) has not up to now been realized. The quantities of water used are very great.

Water Consumed in Making Paper

Data on the water consumption of American mills are available, see Text Book of Pulp and Paper Manufacture, vol. V, Sec. 6, p. 174. According to this authority there is employed for each ton of pulp produced:

1. For groundwood about 50,000 gallons, of which about 10 per cent is used in preparing the wood, 20 per cent for machine operation, 50 per cent for the spray pipes, and the rest for various other purposes.

2. For unbleached sulphite pulp about 115,000 gallons, of which about 9 per cent is used in preparing the wood, 27 per cent for the cooking liquor, 13 per cent in handling the stuff, 8 per cent in dewatering the stuff, 27 per cent for the spray pipes, 15 per cent for steam and power production, and the remainder for various other purposes.

3. For bleached sulphite pulp about 150,000 gallons, of which about 7 per cent is used in preparing the wood, 20 per cent for the cooking liquor, 20 per cent in handling the stuff, 10 per cent for bleaching; 23 per cent for the spray pipes, 10 per cent for steam and power, and the rest for different other purposes.

4. For bleached soda pulp about 150,000 gallons, of which 3 per cent is used in preparing the wood, 23 per cent for the cooking liquor and recovery, 10 per cent in handling the stuff, 20 per cent in bleaching, 7 per cent in dewatering, 23 per cent for the spray pipes, 10 per cent for steam and water, and the rest for various other purposes.

For the paper machine there is required, on the average, 30,000 to 40,000 gallons of water per ton of paper; however, mention is made of one mill manufacturing book paper from soda pulp, which had a water consumption of only 15,000 gallons per ton at the paper machine; this mill was able to keep all its screen water circulating in the process.

Some of these figures appear to me to be low when I compare them, for example, with the data given by Witham, who puts water consumption at 360 liters

per kilogram for groundwood, and states the consumption of a mill making 80 tons of wrapping and bag paper and for this purpose producing 125 tons of unbleached sulphite pulp to be, in round figures, 15,000,000 gallons of water a day.

An American paper mill working up rags uses 4,500,000 gallons of water a day, figured on the product.

European Statistics of Water Consumption

The corresponding figures of Wieselgren (Wochenblatt für Papierfabrikation, 1900, p. 504) agree very well with the foregoing; according to these figures half stuff requires 850 liters of water per kilogram; 580 for bleaching, 70 for whole stuff, 570 for the paper machine, and 70 for sizing, etc., in round numbers a total consumption of about 2,100 liter per kilogram of product.

A German paper machine requires about 260 liters per kilogram of product; the water consumption of a complete paper mill is about 400 liters per kilogram.

Swedish consumption figures are:

300-400 liter/kg. for groundwood; average, 350 liter/kg.

122-360 liter/kg. for sulphate pulp; average, 250 liter/kg.

180-450 liter/kg. for sulphite pulp; average, 300 liter/kg.

100-350 liter/kg. for the paper machine; average, 225 liter/kg.

The limit figures show how great are the variations in individual mills, and for this reason I would not take the average consumption figures of individual mills as a basis for dimensioning the water supply equipment of a paper mill, but would consider the local circumstances, and on these base the final figures.

Mill waste waters vary greatly.

Waste water from wood grinding mills, when defiberized (as it is to the interest of the mill to do), are not troublesome. Moreover, the amount of water passing out of modern plants is very small, because at the present time fresh water is taken in only for the water showers or spray pipes and the water remains in the mill cycle (compare American consumption figures). Carlson has found (Tekn. Tidskr. Kemi, 1910) fiber losses in operation to be about 5 per cent. Today this figure may well be reduced to 3 to 4 per cent.

Mill Wastes Harmless

When not very dirty rags or strongly colored paper are being worked, the waste water from paper mills is harmless,—good recovery of fiber being presupposed. Fiber losses cannot be entirely prevented, and the figures vary according to the mill and to the quality produced. The losses for rag paper are about 2 per cent, for sulphite papers 3½ to 6½ per cent, for newsprint, 10 to 15 per cent (leaving out of consideration the differences in moisture content, which in the case of paper amount to only 4 to 8 per cent, in the case of pulp 10 per cent outside of Germany and 12 per cent in Germany). These figures refer to quantities produced. According to Kirchner, the volume of waste water per kg. of white paper is 400 to 1,000 liters (Das Papier II D, p. 95).

In sulphate pulp mills only screen water should go to waste, since the cooking liquor and wash water are evaporated. The fiber loss is 2 per cent.

Complications in Sulphite Mills

In sulphite pulp mills the matter is more complicated. There are mills which for decades have had waste water lawsuits. Many of the complaints are justified but most are not. There are mills which must evaporate part of their waste sulphite liquor, and today it can be said that it is possible so to concentrate the waste liquor that the fuel value of the residue will cover the cost of the operation. But the equipment is costly. On the other hand certain favored recipes, as neutralizing the waste liquor with lime, etc., are unnecessary, because the watercourses generally contain sufficient bicarbonate to effect neutralization. Fiber losses of sulphite pulp mills that do not bleach are 2 to 3 per cent; for those that bleach their sulphite pulp, 3 to 4 per cent.

I wish to note especially that the figures for fiber loss are good average values; losses of mills that work poorly have not been considered.

How the figures for waste water shape up may be illustrated by an example. The mill concerned is a sulphite pulp mill with bleachery which produces 11,500 tons annually, which is 26 kg. per minute. The total waste water running out of the bleachery was found by measurement to be 2,045 liter/min., containing 52 millig./liter of fiber and inorganic matter. The remaining run-off from the mill, excluding the bleachery, was 5,296 liter/min., containing 54 millig./liter. During a working week (6 days) there was separately discharged from the chlorinating vats 135 cubic meters slime and wash water.

Under the wire of the dewatering machine there was found 28 mg. fiber per liter, and in the water from the suction boxes 59 milligrams per liter.

How Big Are Our Railroads?

IF ALL the rolling stock of all the railroads in the United States were coupled together, we would have a train approximately 273,000 miles long, made up of about 66,000 locomotives and some 2,500,000 freight cars.

American railroads use 25 per cent of all the lumber cut, over 27 per cent of all the coal mined and 30 per cent of the iron and steel produced. Freight car loadings today exceed one million a week, and the railroads pay into the public treasury, in the form of taxes, nearly $1,000,000 a day.

Our idea of a "good mixer" is a beater engineer.

Elements of Paper Making

Notes for Young Papermakers to Acquaint Them with the Materials They Handle

A LITTLE book entitled "An Elementary Introduction to Paper Making," by F. Heckford, which is published by the Technical Section of the Paper Makers' Association of Great Britain and Ireland, has for its object the interesting of young paper mill workers in the study of papermaking. Some of the chapters in this book are astonishingly clear and interesting, and are well calculated to hold the attention of beginners. By kind courtesy of Mr. Heckford and the secretary of the Paper Makers' Association, we are permitted to reproduce extracts from the book.

Early in the book the effort is made, and quite successfully we think, to acquaint the young papermaker with the nature of the materials he is handling.

Fibers Explained

In explaining what fibers are, the student is told that they are the tiny parts that Nature makes and uses to build trees and plants, as a bricklayer builds a house by putting bricks together.

Many fibers are so tiny that you cannot see them with your eye, but through a microscope you will see them quite plainly, notice their shape, and measure their size. You will find some so thin that two thousand can lie side by side in an inch of width, and others so short, that three hundred of them on end will measure one inch in length. The papermaker takes the fibers out of the trees and plants, copies Nature and puts them together again, and makes a sheet of paper. There are millions of them in the page you are reading.

Miscroscopic Appearance of Fibers

The papermaking process described by Mr. Heckford utilizes rags, though other raw materials from which paper fibers are obtained are mentioned in connection with a description of the shapes and properties of different fibers. Thus it is explained that cotton fibers, when they arrive at the beater, as seen under the microscope, are like flat twisted ribbon, and therefore do not lie so close to one another as do straight ones. They are soft and spongy, and these two properties make the best fibers to use for bulky paper and blotting papers. The average length of a cotton fiber in the paper is about an eighth of an inch; that is, it would take eight fibers of average length to equal one inch.

Flax or linen fibers are straight with knots. Used in the manufacture of strong tough papers. The average length of the raw fiber in the paper is about one-tenth of an inch, which means that it would take ten fibers of average length to equal one inch.

Hemp fibers are stringy in appearance. These fibers can be separated into smaller portions called fibrillæ, thinner and narrower than the natural fibers. The beaten fibers interweave so closely together that they are used to make strong, thin, opaque (or non-transparent) paper, such as that used for Bibles. The average length is about the same as that of flax or linen fibers.

Esparto grass fibers are short, thin, round fibers with tapering ends, and are used to make mellow opaque printing papers. The average length of the individual fiber in the paper is about one-fiftieth of an inch; i.e., it would take fifty to equal one inch in length.

Wheat and oat straw fibers are somewhat similar to esparto fibers, but with "kinks" or "knots." They make crisp papers.

Groundwood and Chemical Pulps

It is quite in the nature of things that the maker of a pure rag sheet, like the author of this book should pay small attention to wood fibers. He dismisses the subject with the comment that wood fibers are used in two forms—mechanical and chemical wood fibers. He also confines himself to the fibers from spruce. As to groundwood or mechanical pulp, this consists, he tells the student, of minute splinters of wood, which accounts for the great speed at which newsprint paper can be made. No other fibers can be turned into paper so quickly from the wet end of a Fourdrinier. The explanation is that these fibers part readily with their conveying water on the wire.

Chemical wood fibers are flat, thin, and ribbonlike in appearance. They can be used for wide varieties of paper.

"Old" papers are generally mixtures of the other fibers mentioned above. These, of course, have been used before and, therefore, they have qualities which new fibers do not possess. They are already mixed with size or starch, alum or color and other substances. Mixed with other fibers in the beater, they help to make the paper compact.

Cells Associated with Fibers

Growing with the fibers of plants and trees are "cells." They have not the same value for papermaking as they do not "felt" or interweave like the real fiber. They have a different appearance in each

raw material. Under the microscope you can see the shape of the cells, for instance:

Esparto cells are pear-shaped and small in size.

Straw cells are very bulky in comparison.

Other Sources of Fibers

Other fibers, such as manila, jute, bamboo, are used for making paper, and suitable fibers can be obtained from scores of other straws, reeds, grasses, nettles and woods, all over the world if they should be needed. It takes about twenty-five years' hard work to introduce paper made commercially from a fresh fiber, and there is no need while those fibers mentioned above are plentiful.

The loading, sizing and coloring substances used in papermaking are briefly considered, china clay being named as the chief loading. In some papers as much as 30 per cent and 40 per cent of loading material is used. Pearl hardening, a mineral known chemically as calcium sulphate, is used in writing papers, according to Mr. Heckford. This may be an English custom.

Calendering and Glazing

A simple account is given of the operations connected with the surface finishing of paper, as follows:

When a collar is damped, starched and ironed, its surface is polished.

When a paper is damped and calendered, supercalendered or plate glazed, its surface is polished.

Ironing, polishing, glazing, finishing, smoothing, surfacing, are all much the same thing, and calenders, supercalenders and plate glazers are the irons.

When the paper passes through the paper machine calenders, it is warm and moist. The calenders press out the warm water and air, and press the fibers, clay, starch and other things together. This makes the paper stiffer, thinner and smoother.

When a more polished surface is wanted, it is more highly calendered or supercalendered.

Calendering is done by passing paper through revolving iron rolls, plate glazing by placing sheets of paper between sheets of zinc or board, and pressing paper and zinc together. This is flat ironing.

Plate glazing will give a more lasting surface than calendering. In calendering papers the fibers are pressed down and slightly pushed along the surface of the paper.

With plate glazed paper the fibers are pressed down and inward, and therefore will not rub, spring up or fluff so easily as a calendered surface; but plate glazing is slow and costly, and used only for the best paper, while calendering is a quick operation and suitable for most papers.

Different papers "take on" different surfaces. A calendered esparto paper feels soft and smooth and a wood paper hard and smooth.

There is much more to tell; but you know something now about surface, and how water, heat and pressure are used to glaze or smooth paper, and that the skill of the worker is most important in getting the right surface for different papers.

The part that chemistry plays in papermaking is covered in one short chapter. It is seldom that one sees the elements of chemistry so simply presented. The author begins by telling the student that the substances used in papers have chemical names, chemical signs and chemical weights.

Water is made of two parts hydrogen and one part oxygen—its chemical name is hydrogen oxide, its chemical sign is H_2O, and its chemical weight is 18.

Cellulose is made of six parts carbon, ten of hydrogen and five of oxygen. It is called a carbohydrate, its sign is $C_6H_{10}O_5$, and weight 162.

Lime is called calcium oxide, a combination of calcium and oxygen, sign CaO, chemical weight 56.

Iron rust is called ferric oxide. It is composed of iron in combination with oxygen. Its sign is Fe_2O_3, weight 160.

Soda ash is sodium or natrium carbonate. Its sign is Na_2CO_3, and weight 106.

Caustic soda is sodium hydroxide. Sign NaOH, weight 40.

Now, hydrogen, oxygen, iron, calcium, sodium, carbon, nitrogen and things like these are single elements. They cannot be split up into anything else, but will join one another to make substances like rosin, water and china clay.

Each of these single elements is composed of extremely minute particles called atoms. The weight of an atom is millions of times lighter than an ounce.

Hydrogen has the lightest atoms, and therefore its chemical weight is taken as unity.

An atom of oxygen is sixteen times heavier than hydrogen, and therefore its weight is 16. Iron is fifty-six times heavier, and therefore its weight is 16. Iron is fifty-six times heavier, and therefore its weight is 56, and so on.

Chemical Change

The next thing to tell you about is chemical change, because this is most important.

When water, lime and carbonate of soda (soda ash) are boiled together, they are changed into caustic soda and carbonate of lime. The mild carbonate of soda is turned into caustic soda, and the biting lime is changed to mild chalk. This is chemical change.

The papermaker wants caustic soda to boil with his wood and rags. He cannot get it directly from the earth like coal and iron, so he takes advantage of this wonderful chemical change. He makes use of it also in turning the brittle rosin into milk of size, softening hard water for boilers, boiling rags and wood, bleaching pulp, coloring stuff and testing paper.

In making a chemical change, the papermaker finds the chemical weights very useful. He knows that if he wants to make one ton of caustic soda he must use 14 cwts. of lime, 26½ cwts. of carbonate of soda, and

4½ cwts. of water, because these weights are in proportion to their chemical weights, and it is in these proportions that the chemicals will fully change places with one another.

I will give you what chemists call the formula for this:

Lime	and	Soda Ash	and	Water	makes	Caustic Soda	and Chalk
or		or Sodium				or Sodium	or Calcium
Calcium Oxide		Carbonate				Hydrate	Carbonate
CaO		Na_2CO_3		H_2O		2NaOH	Ca_3CO
56 parts		106 parts		18 parts		80 parts	100 parts
	180				=	180	

You will notice that although the chemicals have changed places, the total weight is the same. Nothing has been lost.

Again, the chemical weight of rosin is 672, and soda 106, and the papermaker uses these weights to make different sorts of sizing materials.

Properties of Paper

On the properties of paper, there is a chapter that is sure to hold the attention of beginners, for the author treats the paper as a thing alive. Paper, he tells us, shrinks in heat and expands in cold, absorbs ink and water, curls, wrinkles, stretches and swells like animals and plants. It is hardly ever still. It loses and gains weight, suffers from disease, and sends out electricity.

Now, these things make paper alive and sometimes troublesome to people who use it for printing and writing, for making envelopes, books and other things.

Think for a moment of the paper on the wire. It is made up by weight of, say, 98 parts of water and 2 parts of fibers and solids. It has no strength. In five minutes or less it is made up by weight of 5 parts water and 95 parts of fibers and solids, will hold up half a ton in its width and gives sparks at your fingers.

It has been quickly turned from a watery mass into finished paper. It is stronger and stiffer one way than another, so that if the leaves of a book from back to front are put in the stiff way, they will not lie so flat when opened as when placed in the other way.

Paper expands or stretches with damp from the air in the weaker way, so that the printer has to choose the best way to make his colored pictures look nice and even.

The side of the paper that has been next to the wire retains the mark of the wire, and the printer, therefore, likes the other side, because it is not wire marked, and he can print a better picture.

A strong, hard paper will curl the stiffer way with warmth, so it is kept in a cool place to keep it flat.

These properties are mentioned to show that they are natural to paper. They are in it until it dies of old age or disease.

One more thing about paper. Think of a ream which contains 500 sheets, weighs 40 lbs., and measures 3 inches in thickness—the machine man has to weigh and measure the paper stuff as it flows onto the wire. He must know how much water to use, what speed to run the machine, how much stuff will be lost through the wire, how much pressure to give the paper, and so on. He does this in his mind, he has no weights, measures or instruments to tell him how much dry paper there is in the watery stuff, so if the ream of paper weighs 39 lb. and measures $3\frac{1}{16}$ inches in thickness instead of 40 lb. and 3 inches, he will have done very well, indeed.

This is a way of telling you that the paper in the book you are reading is made by craftsmanship and not by a science like arithmetic, which tells you that two multiplied by two, equals four.

Savings and Save-alls

By B. T. McBAIN

THERE are quite a number of so-called save-alls on the market for use in pulp and paper mills, but a few if any of them save all they attempt to save. Should this condemn them? Do any of us individuals save as much each month or year as we set out to save? Should we be condemned or condemn ourselves?

When the saving of white water and other wastes in pulp and paper mills was first taken up by me as a business—a habit—a hobby—or whatever you want to call it, 100 per cent of the mills in America were wasting at least 10 per cent—that was in 1912. I was present at Columbia University at the Congress of Applied Chemistry, and if I remember correctly, Mr. A. D. Little of Boston was in the chair at the particular meeting to which I refer.

An eminent German chemical engineer, on being asked what impressed him most as he visited the great paper mills of America, replied, "Your waste amounts to more than our profits."

If I ever had an education started with eight words, it was started then. I said to my "side-kickers" Uncle John Lewthwaite, now deceased, and F. A. Olmstead, now of Hood River, Oregon, who had accompanied me East, "That isn't so in our case" for we had been working then for two years in the stop-

ping of "financial leaks" in our far western charges, but did not know that we were largely alone in our efforts.

After this Congress adjourned we "three graces" visited 35 or 40 of "the best mills in America" as our New York friends dubbed them and were surprised to find that our German friend's observations must be about right. Waste was everywhere—in everything—raw materials and labor alike—fuel being among the worst wastes we noticed.

One high class paper mill manager allowed us to visit his plant in Maine provided we would report our findings to him. When we did and emphasized waste he wouldn't believe us, though when I next visited that plant I found he had followed up our lead and suggestions with action. So it was everywhere in New York, Vermont, New Hampshire, Maine, Virginia, Minnesota, Wisconsin and Michigan, Quebec and Ontario; it mattered not where we went, we saw the need for save-alls.

However, save-alls were not then in existence to amount to much, except the one under the couch of Fourdrinier machines so called, where the machine tender pulled the lever if he wanted to, or ever thought to do so. Everything was wasted. If it didn't make paper the first time, it went to the sewer —the profit went with it.

Now there are dozens of automatic and mechanical contrivances for this purpose. The Inclined Automatic, the North rotary, the Dorr settling and the Booth sedimentation, the Bird rotary, the Fischer incline, the Woods machine, the Kelley filter, the Oliver and many, many more are all good. They will all save their cost and considerable interest within a very short period, but none of them save it all—not because they are not perfect—some of them—but because of the lack of education among the people operating pulp and paper mills, their expert help and otherwise.

If slime comes, it is the save-all's fault, even though before they had one they had slime.

If dirty paper results, it is the save-all, though formerly at intervals just as poor paper was made.

If this or that happens, it is the save-all's fault—such "passing the buck" I never saw.

Superintendents, get busy and save; if you don't others will occupy your places and will save.

Filtered water is cleaner than unfiltered water. The paper itself is the best possible medium for filtering and cleansing the water to be used, even though used over and over. Cleaner paper is made from save-all water than with new water direct from the river. Keep the pipes clean and the paper will be cleaner with return water than otherwise.

Try a save-all because it is your idea and it will work. Save.

Lengthening the Life of Brickwork

SAYS T. F. Sullivan, Engineer, Eddy Paper Corporation, Three Rivers, Michigan: "In our plant we employ nine 300-horsepower vertical water tube boilers, each fired with a mechanical stoker. These boilers are usually operated at about 175 per cent of rating, although on occasion the load reaches as high as 225 per cent of rating. In winter the demand on the boilers is very great, and all nine of them are in constant operation, which means that inspection and repairing must be done on Sundays.

"Up to about three years ago we used ordinary fire-clay as a bond in laying up fire-brick in the arches and side walls of these boilers. This work was always done in summer when one or two boilers could most easily be taken from operation. As a general rule, this brickwork would last about a year, requiring, under ordinary circumstances, another relaying the following summer. Once in a while, however, the brickwork would give way during the winter, when we were in our greatest need for power, and this always meant a loss in production while the furnace was down for rebricking.

"Recently we have abandoned the use of fire-clay and employ instead a patent fire cement as a bond for the fire brick. Through this change we have lengthened the life of the fire-brick to an average of 1½ years, and never, in the three years of its use, has the high temperature cement caused a loss in production through failure in the winter months.

"It would be almost impossible to accurately calculate the production increase due to the longer life of the arches or sidewalls and the elimination of the unwelcome shut-downs. It is not difficult, however, to estimate the difference in costs of rebricking furnaces once every 18 months as against once a year. This difference, we believe, totals well over a thousand dollars a year—in favor of the fire cement."

The experience of Mr. Sullivan is most interesting and constructively told. We should like to have other readers write us of their experiences with this or any other problem. Such open discussions result in constructive good to the industry.

More important than ever before is the problem of economical production. In a broad way we have learned that it pays to supplant hand labor with machines wherever possible. There remains, however, a multitude of little ways in which automatic devices or more efficient equipment can justify its cost and earn its keep—and it is the little things, small in themselves but mighty in the aggregate, that determine the color of ink we use on our ledgers.

Foreman Training in the Paper Industry

Part III—Discussion Material for Foremen's Conferences

By J. K. NOVINS

Author of "A Training Program for the Factory Foreman," "Foreman Training in Practice," "Manual of Practical Training for the Railroad Foreman," etc.

The Foreman Dissects the Job

IN ANSWER to the question, "Who gets the most out of a job analysis?" one conference leader of long experience replied quickly, "The man who works it out." It is for this very reason that two and three, and sometimes five meetings out of a series of from ten to sixteen conferences are often devoted to analyses of the various jobs in the factory by the foremen.

In this article the writer will take up the principles of job analysis—how the leader prepares the men for definite job analyses, the forms used for the analyses and how the subject is tied up with job instruction and other foremen's supervisory responsibilities. In the next article will be reproduced typical analyses developed by foremen at the conferences held in such plants as A. M. Collins Manufacturing Co., Bemis Bros. Bag Co., Miami Envelope Co., etc. In succeeding articles the writer will develop other topics usually taken up during a foremen's conference, and he will show how these topics were actually developed by the foremen and the leader.

This series is a manual on the subject of foreman training, and as such is replete with valuable suggestions for the installation of a foreman training course in the paper industry.

Part Three contains eight chapters, of which this article is the first. "Making the Job Analysis" will appear in the next issue.

The author of this series is available to answer any inquiries regarding any phase of foreman training on which the reader might wish to be enlightened.

Significance of Job Analysis

A rule followed by many leaders is to introduce job analysis only after the men had been made to understand the significance of this topic in relation to the instructional responsibilities of the foremen. The leader develops the thought that by means of job analysis the foreman will learn the most effective ways of conveying simple processes to the green worker and also it will improve the foreman's understanding of job operations and his responsibilities.

The leader is armed with certain forms for constructing the analysis, and then proceeds to have as many of the men as is possible to construct their own analyses. This is a wonderful experience for the foreman, for he learns to look upon his job objectively. In the future he will take nothing for granted. His orders will be clearer, and he will better interpret the job analyses taken by the factory experts. In this connection it should be stated that the foreman's job analysis will not necessarily be as complete as one taken by an expert, but this is hardly necessary, as the objective desired is for the foreman to use scientific methods in his every day work—therefore, the method is the thing that must be conveyed to the foreman.

The writer recalls two interesting incidents which will convey to the reader the importance of job analysis by a foremen's group. One was related by an investigator who recently conducted an intensive job analysis of foremen's duties in twelve Pittsburgh plants. He said it was an extremely difficult task, chiefly because veteran foremen found it almost impossible to analyze their own jobs; only the younger men could do so with any ease. The explanation was that the veteran foremen did their work by force of habit—and experience. The younger men, just put on the supervisory job, were anxious to learn, to grasp situations and to make improvements. In other words, they took joy and pride in their work, and they were really an asset to the organization that employed them.

The other relates to an efficiently organized plant which employs a somewhat complicated quality production system. The writer spent the good part of a day in this plant, trying to comprehend the details of the production plan, with only moderate success, and he learned that others more familiar with the particular industry found it equally difficult to understand the system. Yet, the production goes on without a blunder, chiefly because it is the company's uniform policy to have its foremen make the necessary job analyses. After the foremen have made the detailed analyses, the results are recorded in the standard job analysis manuals supplied to each foreman in the plant. Furthermore, every now and then the foremen are called together to revise the rules previously formulated by them. Someone reads aloud the rules, which are discussed, and provisions changed to meet changed conditions. It is the consistent policy of the company never to have a foreman write anything

down until he has fully analyzed the situation or operation.

Getting Down to Fundamentals

The first essential is for the leader to develop the elemental idea of job analysis. He then defines terms used in making the analysis. Then, after job analyses are made by the men of distinct jobs in their departments, he shows the relation between job analysis and instruction and other supervisory duties of the foreman.

For instance, at the conference of foremen at the Gardner and Harvey Company plant, the idea was illustrated by selecting a very simple job. How this was done Mr. R. W. Jones, who led the conference, explained in his report of the conference:

"To develop the idea of job analysis, a simple job was selected, one that would interest all members of the group and at the same time would illustrate the method of grouping or blocking the units of a job.

"A paper scale was brought into the conference room and one of the men was asked to weigh a piece of paper and the group was to observe the job.

"Several different ways of blocking this job were used by the men, but the following form was decided upon by the group to be pretty satisfactory:

Weighing a Piece of Paper

1. Check up the scale for accuracy.
2. Fold paper to be weighed.
3. Place paper on scale.
4. Read the weight.
5. Take the paper off scale.

"All jobs seem to resolve themselves into units or blocks, just as music does into rhythm and the idea of job analysis is to determine the blocks, then to go further and determine the operations of the blocks.

"It is difficult to analyze a job thoroughly, because we are in the habit of thinking in large units or thinking analytically. The better we know the job the harder it is to analyze carefully."

This last paragraph contains an idea full of significance, something that the leader should impress on the men in explaining the importance of job analysis.

Definitions of Terms

The leader then defines briefly the terms used in a job analysis, and he then proceeds to illustrate the terms defined.

At the A. M. Collins Manufacturing Company foremen's conference, the following definitions were developed:

1. Analysis—Consists in separating a thing into its elements so that it can be viewed from every possible angle.

2. Job Analysis—Making a careful study or classification of a person's job.

3. Departmental Job—One that results in a distinct product, or in a particular kind of service.

4. Pay-roll Job—Classification used on the payroll. A distinct unit of a departmental job.

5. Work Job—A distinct part or sub-division of a pay-roll job.

6. Operation—A single, distinct part of a work job.

7. Operating Point—A unit in an operation. It may be human effort, or it may also be machine work.

For the sake of comparison, we will present here the definitions of the same terms as they were given by the leader at the conference of the Bemis Bros. Bag Company foremen:

1. Analysis—By analysis is meant an inventory of contents or points that affect any given department.

2. Job Analysis—Job analysis is used in this conference to mean the classification of a workman's duties into work jobs, operations and operating points.

3. Job—A job is anything that anybody is paid to do.

4. Pay-roll Job—A pay-roll job consists of one or more work jobs assigned to an individual and represents the things he is paid to do.

5. Work Job—A work job is a single job within a plant.

6. Operation—An operation is a definite step in the completion of a given work job.

7. Operating Points—Operating points are subdivisions of an operation where the workman does something different for the purpose of securing a result which is necessary for completing the operation.

In order to illustrate the definitions, the leader gets up a chart, which, at the conference of A. M. Collins Company foremen, was laid out as follows:

Departmental Job	Pay-roll Job	Work Job	Operations	Operating Points
Printing	1. Compositor	1. Composition	1. Making up forms	1. Assembling material 2. Placing material in proper place
		2. Stonework	2. Breaking up forms	
	2. Pressman			
	3. Feeder			

To further illustrate the principle, the leader asks a foreman in one department to list his departmental job and then reduce this into the various pay-roll jobs. At the Collins plant, Foreman Edward Travis of the Cutting Department reduced the departmental job, cutting, into the following pay-roll jobs: 1. Slitter; 2. Cross cutter; 3. Guillotine cutter; 4. Cut card cutter; 5. Round corner die cutter; 6. Local cutters R. R. tickets; 7. Packer—Box; 8. Packer—Band; 9. Packer—Bundles; 10. Sorter.

Foreman William Levick, of the Coating Department, listed his departmental job, coating, subdividing it into the following pay-roll jobs: 1. Head color mixer; 2. Color mixer; 3. Machine foreman; 4. Ma-

chine tender (coating); 5. Machine tender (reeler); 6. Stockman; 7. Laborer.

The leader then calls on one of the foremen to reduce a work job into its operations. This was done, at the Collins plant, by Foreman Robert Carroll of the Beveling Department, who subdivided the work job, beveling, into the following operations: 1. Get orders; 2. Get material; 3. Set machines; 4. Grind knives if necessary; 5. Replace knives and adjust; 6. Start machine; 7. Constantly inspect edges for nicks and squareness.

Handy Forms for Analysis

To facilitate job analysis by the foremen, the leader will often introduce special forms. The accompanying forms (I, II and III) are the most important, and were used at the conference in the Bemis Bros. Bag Company plant:

The length of this sheet depends on the number of work jobs listed. The same conditions must be borne in mind in case of the other blanks to be reproduced.

WORK JOBS IN PAYROLL JOBS

(Use as many of these forms as there are Payroll Jobs)

Name..... Position.....
Department .....
.....
Payroll Job.....as part of Department
Name of Work Jobs.....as part of Payroll Job
.....
.....
.....
.....
.....

Form I

Mr. R. W. Jenkins has developed another form of job analysis which he has introduced successfully at such plants as Gardner & Harvey Company, Champion Coated Paper Company, and Miami Envelope Company. In addition to jobs and operations, the job analysis also takes into consideration instruction units and analysis of instructional units. The form developed by Mr. Jenkins is as follows:

FORM FOR JOB ANALYSIS

Department .....
Foreman .....
Machine No. .....
Time of Training Period.....
.....
.....

Jobs	Operations	Instruction Units	Analysis of Instructional Units

The terms, "Instruction Units," and "Analysis of Instructional Units," are defined by Mr. Jenkins as follows:

Instruction Units are units or "bodies" of knowledge which an operator can retain as the result of being instructed. The degree of skill evident in the operation determines the number of instruction units.

Analyzed Instruction Units are the steps or procedures that a foreman should follow in the work of instructing apprentices or new operators.

Now that we have laid down fundamentals, we are ready for further consideration of detailed analyses. These will be taken up in the next article. By means of practical illustrations will be shown how the job analyses are tied up with the instruction of workmen. That will then pave the ground for further discussions on the actual instruction of workers by the foreman which will be discussed in a subsequent article. In this way we will consider in logical order a comprehensive series of discussions for a typical foremen's group in a paper plant.

OPERATIONS IN WORK JOBS

(Use one of these forms for every Work Job)

Name..... Position.....
Department .....
Payroll Job.....as part of Department
Work Job.....as part of Payroll Job
Operation as part of Work Job.....
Operations:
No. 1 .....
.....
.....
No. 2.....
.....
.....
No. 3.....
.....
.....

Form II

OPERATING POINTS IN OPERATIONS

(Use one of these forms for each Operation)

Name..... Position.....
Department .....
Payroll Job.....as part of Department
Work Job.....as part of Payroll Job
Operation.....as part of Work Job
.....
Operating Points as part of Operation.....
Operating Points.....
.....
.....
.....
.....
.....
.....

Form III

A test of silicate applied in the beater to improve the quality of ay particular paper should be run at a time when continuous operation on one grade and weight is possible for at least twenty-four, or better still, forty-eight hours. At the beginning of the run, a liberal sample to represent the result of the old furnish should be set aside to be compared with the paper produced after a run of twelve hours or more with a constant supply of silicate.

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

Ten Years of Idleness

A CERTAIN hard-working owner of a mill who knows all the ins and outs of every department of his business insists on taking a hand in practically everything. This ambitious habit sometimes leads to amusing occurrences. Perhaps it would be better to say that it leads to amusing non-occurrences.

For example, a number of years ago this man purchased a new machine. I will not name the machine, because readers might guess who he is, and it may be that he would not care to get this kind of publicity. The manager of the mill wanted to start the machine immediately, as soon as received, but the ambitious owner said, "No, wait a while. I am busy at the inventory now." A month later the manager brought the fact to the attention of the owner that the machine was still idle, and the owner said, "That's right. We'll have to get it started soon, but I'm busy right now at so and so."

The manager brought the machine to the owner's attention a number of times and the same thing happened so regularly that the manager, after a while, was content to let the matter drag, and nothing was said or done.

Ten years later a new manager came upon the scene. He was there but a short time when he approached the owner and said, "I need that machine. Let's get it started." Even then, however, after ten years, the owner put off the new manager. In fact, he put him off several times, but the new manager was more persistent than the first one, and proceeded to persistently "nag" the owner until finally in desperation the owner got busy and put the machine into operation with his own hands. That was what he wanted to do all the time. The only reason for the postponement was that he wanted to get it started "with his own hands." The machine has been operating constantly and with perfect satisfaction ever since. The manager could have started it, but the owner wouldn't allow him to do so.

Chart for Selecting Wooden Beams

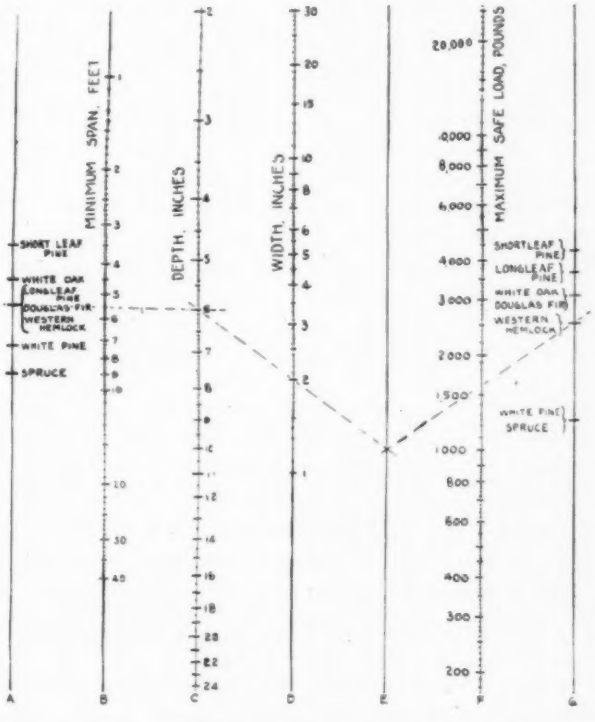
THE paper mill engineer will find the accompanying chart handy for selecting safe beams made of the ordinary woods such as shortleaf pine, white oak, longleaf pine, Douglas fir, western hemlock, white pine and spruce. It is based upon data adopted by the American Railway Engineering Association for safe uniformly loaded wooden beams of rectangular section.

To use the chart simply zigzag a straightedge across three times, or stretch a thread across three times as indicated by the zigzag dotted line, and the problem is solved.

For example, it is desired to hold 200 lb. per ft. on a wooden beam of 2 in. by 6 in. western hemlock over a span of 5 ft. Will the beam be safe?

Run a straight line from the point in column A opposite "western hemlock" over to the depth 6 in., column C. The intersection with column B shows the minimum span to be 5.5 ft. The beam will therefore be safe as regards span.

Then from the depth 6 in., column C, run a straight line through the width 2 in column D, and locate the



intersection in column E. Then from that point of intersection run a straight line over to the point in column A opposite "western hemlock." The answer is found at the intersection with column F and is 1,600 pounds.

Since it is desired to hold only 5 x 200 or 1,000 lb. on the beam, and since the beam will actually hold 1,600 lb., it certainly is amply safe. In fact, the chart shows that a beam made of white pine or spruce would be safe under the load.

Inversely, the chart may be used for finding any unknown factor or factors. If the kind of wood and the span are known, the first straight line through columns A, B and C, gives the minimum depth of beam which must be used. If the width of beam is

unknown, the line through the columns E, F, G is located next and lastly the line through columns C, D, E gives the minimum width of beam in column D. It is all so simple that further explanation is unnecessary.

The weight of the beam itself is included in the safe load given in column F, hence the user of the chart need not worry about that point.

Can We Make It Warmer?

WE SELDOM give thought to the fact that we are all living in compressed air and that compressed air is absolutely necessary to our existence.

Similarly, very few of us are aware of the tremendousness of this supply of air. I figured it out not long ago, and I stumbled upon it in this way: I was watching the thousands of automobiles rushing back and forth on the streets and avenues of New York City. I said to myself, "Surely, all of this burning gasoline must have an appreciable effect upon the temperature of the earth's atmosphere. Millions of tons of coal are burned all over the world every year. This coal develops an enormous total heat which is eventually absorbed by the air. Consequently, the air is warmed. In addition, we have millions of cords of wood and millions of barrels of oil being burned every year. Doesn't it seem logical that all of this heat generated by combustion should make the atmosphere warmer?

I decided to "figure it out" and so wrote three letters to the foremost authorities in the United States in the three respective fields—coal, oil and gas, and wood. As a result I arrived at the following figures as the "World's total heat" generated per year:

Coal .....35,250,000,000,000,000 B. T. U'S.
Oil and Gas.... 4,220,000,000,000,000 B. T. U'S.
Wood .....12,900,000,000,000,000 B. T. U'S.

World's total...52,370,000,000,000,000 B. T. U'S.

Next it is necessary to know the total amount of air enveloping this earth which is a comparatively easy question to answer. It is easier to answer than, "What is the total heat generated per year?" The quantity of air can be computed with far greater accuracy because it is known that the pressure of air on every square inch of the earth's surface is very close to 14.7 pounds per square inch. It is thus merely a matter of determining the area of the surface of the earth in square inches and multiplying by 14.7. The answer is: 11,850,000,000,000,000,000 lbs. of air.

Now that we have the total heat and the total weight of air and knowing that 0.2375 B.T.U. will raise the temperature of one pound of air one degree Fahrenheit we get this:

52,370,000,000,000,000 B. T. U. ÷ 0.2375 = 220,000,000,000,000,000 = the number of pounds of air whose temperature would be increased "one degree" by the total heat.

However, I find that there is MUCH MORE air in the world than 220,000,000,000,000,000 pounds, there are 11,850,000,000,000,000,000 pounds, the latter figure being 54 times the other. In other words, all of the heat produced on earth per year will increase the temperature of our atmosphere only 1/54th of one degree. Or, again, in other words, it takes 54 years for all of the heat applied at the same rate every year to raise the temperature of our atmosphere one degree.

In view of this extremely small temperature increase per year; in view of the fact that vegetation absorbs carbon dioxide, one of the products of combustion; and in view of many things that I do not fully understand; I conclude that the temperature of our atmosphere remains unaffected by the activities of human beings. Maybe I am right. Maybe I am wrong.

What Is the Limit for Steam Plants?

DOCTORS Mellanby and Kerr, of Glasgow, have published some interesting figures in the British journal, Engineering, on the possible future performance of steam plants. They conclude that 1,250 pounds per square inch will eventually be the best pressure. Feed water will be heated to 545 degrees F. The maximum temperature of the steam will be 900 degrees F. With a vacuum at 29 inches, and an economizer and boiler efficiency of 90 per cent, assuming that the auxiliaries will consume 5 per cent, their result is 9,875 B. T. U. per kilowatt-hour. This is equivalent to 0.544 pounds of coal per horsepower-hour, on the basis of 13,500 B. T. U. per pound of coal.

Just how a temperature of 900 degrees F. can be safely carried is not explained with sufficient clearness for me to comprehend. But they claim that 900 degrees F. is possible even with modern materials. Most engineers consider 700 degrees F. as the safe limit under present day conditions. In some places, 750 degrees is actually being used. After 750 degrees is reached, the ultimate strength of steel decreases very rapidly and the elastic limit has decreased about 33 1/3 per cent. However, it may be that Doctors Mellanby and Kerr are right, as they apparently have done a great deal of experimenting. There is still much to be known about power plant performance under higher pressures and temperatures.

With an electric steam generator, the St. Croix Paper Co., Woodland, Me., saved $580 in coal in one week. It is rated 5,000-kilowatt, 6,600-volt, 150-pounds pressure, and was made by the General Electric Company. It is used for generating steam necessary to heat the mill on Sundays and holidays, when the motor load is shut off, and the load curve of the mill is ironed out by using this electric boiler to take up the variations in electrical load on the mill from time to time.

A Silver Loving Cup for the Best Safety Record

A HANDSOME silver loving cup will be offered for competition among the paper mills who are members of the National Safety Council by The Paper Industry of Chicago, for the best accident record achieved during the month of August, 1925. Every paper mill in the Council, no matter what kind, is invited to participate in this contest and the results will be announced at the sessions of the Paper & Pulp Section at the next Annual Safety Congress to be held in Cleveland, Ohio, September 29 to October 2.

Picture of the loving cup which will be suitably engraved and presented for the best safety record. It is twenty inches tall and the bowl is eight inches in diameter

The details of the contest, with rules for participation, have been prepared by the headquarters' staff of the National Safety Council. Each paper mill that is a member of the National Safety Council will be notified of the rules and conditions of the contest by a special letter. Generally speaking, the method of rating the different mills is the same as has been used for several years by the National Safety Council, with the consideration of another factor which will take into consideration differences in operating hazards in various mills. For example, some mills do not operate a woodroom or a sulphite mill or pulp mill. It should be easier for the mills having stock, beater, machine, and finishing departments only, to make a better accident record than the mills with the above departments in addition to the woodroom and pulp mill. The equalization factor will take care of this difference, so as to make the contest between all the mills of all kinds much fairer for each mill. Each mill will compete as a unit. Companies operating more than one mill will keep separate records for each mill, and send the separate records to the National Safety Council. The object of this plan is to stimulate mill interest in those firms having more than one mill, and to further interest the personnel of each mill in accident prevention work.

The basis of reckoning mills will be the number of man-hours worked, the number of days lost because of lost-time accidents, and the equalization factor. Each mill will be asked to give the same information to the National Safety Council as they did for the tabulation of their individual accident records which appeared in the June, 1925, issue of National Safety News, with a little more additional information and copies of the reports of all lost-time accidents that have occurred. Lost-time accidents only will be considered, a lost-time accident being an accident that requires absence of the injured man over and above the day or shift that the accident occurred.

THE PAPER INDUSTRY has prepared a poster announcing this contest for distribution to all mills. The distribution of the posters will be made through the office of the National Safety Council. If you are eligible to this contest please forward your requisition for these posters to be displayed in all departments of your mills. They will be furnished in any quantity free of charge, and does not affect the allotment of posters received from the National Safety Council.

It is hoped that all mills will take advantage of this contest, and interest their entire organizations so as to make a new low-accident record.

Participation in a contest of this kind will show the operating organization that it is possible to reduce accidents to the minimum if everybody in the mill works hard.

In a recent statement, W. H. Cameron, managing director of the National Safety Council, points out that no sane person would cut a hole in the floor, or leave such an opening unguarded, just for the fun of falling into it and breaking a limb. It is the holes in factories, on the streets, on pavements and in our homes that the safety man wants covered up. Safety does not mean cowardice. Precautionary teaching does not necessarily result in the development of a "fear complex." The right kind of safety means constructive conquest, not timid submission.

Editorial Comment

By WILLIAM SIBLEY

Commercial Aviation Soon to Be Basic Industry

SINCE the beginning, the exercise of foresight has been the determining factor in the success or failure of every enterprise. The reason for the outstanding success of certain corporations, or the astonishing accumulation of wealth by certain individuals, can invariably be traced to either one man or a small group of men who are possessed with vision. The Astors and the Vanderbilts bought cheap land on Manhattan Island. Marshall Field believed in Chicago—and mortgaged his property to buy more property. Much of our fruitful Northwest owes its excellent start to the vision of James J. Hill. The International Harvester Company spends nearly one million dollars annually in the education of the farmer's children. The American Telephone Company has laid conduits from coast to coast sufficiently large to take care of the growth in telephone service for the next forty years.

On the other hand, phonograph companies were nearly swept out of business because they poohpoohed the development of the radio. Not ten furniture manufacturers were prepared to meet the competition of metal furniture. The millwork folks and lumber people are only now realizing the damaging influence of substitutes. The St. Luke's hospital in Chicago is 19 stories high and there isn't a stick of wood in it, either in construction or equipment.

There has never been a time when the exercise of vision was more imperative. Patents are being issued in this country at the rate of 1,000 a week. Far-reaching developments and revolutionary improvements are being made in every field of endeavor. The development of synthetic, fire-proof shingles has put a serious dent in the business of cedar shingles. The production of silk from spruce wood and cotton waste has materially reduced the importation of silks from the Orient. Sugar from corn is seriously disturbing the cane and beet refiners. The automobile and the electric transit have taken people off their feet, with the result that the shoe industry is hard pressed. Down in Texas a man has developed a centrifugal separator which whirls the meat from crab shells automatically—and which does the work of over two hundred men.

During the next few years we will witness the rapid development of aviation in this country. Since July 1st Chicago and New York residents can send mail back and forth over night. The recent organization of the National Air Transport, Inc., with a capital of ten million dollars, for the carrying of fast freight and express matter between New York and Chicago is a signal step in the development of civil aviation. Aeronautical experts foresee the early development of at least ten other routes, radiating from New York, St. Louis, Chicago, Salt Lake City and San Diego. Daniel Guggenheim recently announced the endowment of $500,000 for the founding of a school of Aeronautics in the College of Engineering of New York University. This school, the first of its kind, will not only train engineers in the design of craft and the management of aeronautical enterprises, but will force other universities to include aeronautics.

If there is an idea lurking in the mind of anyone that we have seen far-reaching changes, or passed through a period of commercial stress, during the past ten years, that person will have to devise new adjectives and stronger words to define the character of the era now approaching.

In Consideration of Investments

THIS week's bulletin from the United Business Service carries an article entitled "Sell Some Stocks—Retain Others." This decidedly indefinite caption is followed by some very constructive reading intended to instruct in the matter of sound and unsound stocks. Among the groups listed as being the most reliable and whose immediate prospects are for well sustained earnings are gas and electric utilities, railroad, electrical equipment, fertilizer, petroleum, agricultural machinery, tire and rubber, mail order, tobacco, and chain store. They follow this list with the comment:

"We do not mean to infer that the shares of all companies in the above groups will advance materially from the present levels, but we do believe that in a majority of cases, stocks representing the above groups have not over-discounted prospects for the last six months of the year. Stocks in this group having a reasonably consistent dividend record and which now afford a good income return should, we believe, be retained for the time being at least."

In reading that advice we couldn't help remembering the statement one sales manager of a prominent Chicago investment house made when talking to a group of young men just emerging from college. This man—an authority in the financial world and interested primarily in selling securities said: "No man in my mind, be he young or old, has money enough to buy either stocks or bonds until he has possessed

—— on Timely Subjects

himself with at least $40,000 worth of life insurance."

That was a broad statement for a securities salesman to make. Sufficiently broad to merit serious thought. In explaining that statement he continued: "Many of our customers are too poor to buy and continue $40,000 worth of life insurance. And needless to say, I don't make that statement everywhere. But in my opinion, life insurance offers the safest and best form of investment for the man of limited means. If you won't buy life insurance policies, and will buy stocks—always consult your banker before so doing. Never be "railroaded into buying" anything. If the stock is such a golden opportunity that everyone wants it and you won't be able to get it unless you sign the contract immediately—let the other fellow have it. Let the other fellow have his ten to fifty per cent. Be content with your three to six per cent."

Many persons just emerging from the college of experience, and those just leaving the college of education, might well take home and keep this advice.

Railways Pressing Motor Trucks into Service

DURING the past twenty-one months the electric railways of this country increased their motor bus equipment 230 per cent. The railway-owned motor bus mileage increased, during this same period, 275 per cent. The number of railways, both steam and electric, using buses increased 70 per cent.

The American Railway Association officially recognizes the motor bus as an important factor in meeting the transportation needs of the public. Particularly in the matter of short haul, and less than car load lot freight, have motor trucks been used to the advantage of both shipper and carrier.

Only recently the Pennsylvania Railroad has adopted the motor truck as auxiliary to their freight carrying equipment, and they now promise much quicker L. C. L. service on all divisions where this supplementary means has been employed.

Mr. Quinlan, superintendent of Cook county's highways, states that on the average day the total motor traffic entering and leaving the city of Chicago exceeds 110,000 vehicles. This, it seems, is about 36 per cent of the total motor registration in Chicago. Of these vehicles nearly 6,000 are trucks, which carry from or to the city over 6,500 tons of commodities. The one hundred thousand odd passenger cars average 1.9 persons per car, and since the average daily motor mileage in Cook county is approximately 990,000 miles, we find the motor depriving other transportation mediums of at least 1,800,000 passenger miles every day.

We will probably see continued adoption of the motor vehicle as a supplement to the railways.

Are We Lawful—or Awful?

DURING the past two months I have had occasion to attend—"cover" as they say in writer's parlance—nineteen conventions. They were annual conventions of various trade associations. In the same length of time I have lectured at four other gatherings of similar nature. The great majority of the attendants or delegates to these twenty-three conventions were men from out of town. Many came long distances, and considered their trip to Chicago in the light of a partial vacation.

In this same period of time I have visited several factories and plants in the Chicago district. Not infrequently I found myself in what might be called, for lack of a better term, a "scrubby" neighborhood.

The only evidence of drunkenness I have seen during the past two months has been among the men who were attending conventions. The flagrant violation of our constitutional amendment is best seen among convention goers. At only one of the conventions I have attended during the past sixty days (that of the Master Boiler Makers) did the officers in charge frown on the free use of liquor.

In this recitation of personal experiences no belittlement of the value of any convention is intended. Few investments pay greater dividends than the investment of an association membership. The point is merely this: Law enforcement is possible only through the co-operation of the public. Strict adherence to law comes when the public contributes 98 per cent of the energy and the police force 2 per cent.

How are we going to know whether prohibition—or any other law—is a good thing, if we don't let it work? When you hear anyone censoring a law, just remind them that the statutes as written in Washington are but pieces of paper. *We* are the law.

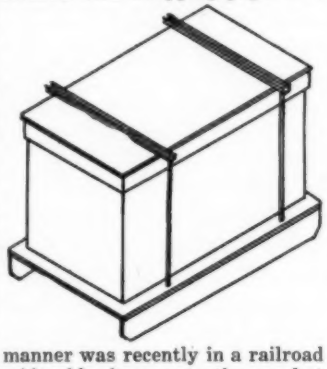
Being English to the bone, one of my uncles is very proud of his antecedents. He loves to tell of the Sibley lineage, which it seems, extends back a century or so before the Mayflower. Particularly is he interested in two brothers, Theodore and Robert Sibley, who came to this country in 1638.

Upon delving into the old records recently I found, much to my surprise, that the two boys had to come to America. They came at the request of the authorities. You see—they had been stealing sheep!

Practical Helps for the Mill Man

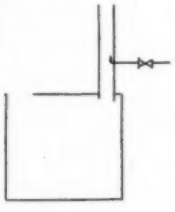
Crate for Shipping Paper

THE illustration shows a method of crating paper for shipment in sheet form that has recently been patented. The sheets are piled on a skid, covered with wrapping paper and the wood cover placed on the top. The cover is held in place by long bolts attached to channel irons running across the top and the bolts extending down through the skid at the bottom, a considerable saving in time and lumber by using this method instead of the old method of boxing. The crates may be used over again when enough have been collected so they may be shipped back to the mill. A carload of paper crated in this manner was recently in a railroad wreck which resulted in considerable damage to the car but with no loss of paper, while if it had been boxed it is likely that some paper would have been spoiled.



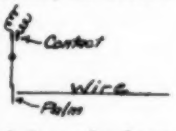
Handling Hydrate of Lime

IN MAKING up the milk of lime for the preparation of bleach liquor by the absorption of chlorine gas, the dry hydrate of lime is usually handled in 50-pound bags, and when they are emptied the fine dust is very irritating to workmen. By placing a cover over the vat and a small steam jet in the vent pipe in the manner indicated this trouble has been eliminated.



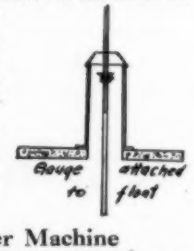
Wire Alarm

AFTER experiencing some difficulty in keeping the wire running straight on a Fourdrinier machine, an electric signal to warn the machine tender when the wire runs over to the side was found helpful. Although the guiding is ordinarily taken care of automatically, if anything should occur to prevent this, the siren gives the alarm at once, making it unnecessary for the machine tender to watch it as closely as he would otherwise.



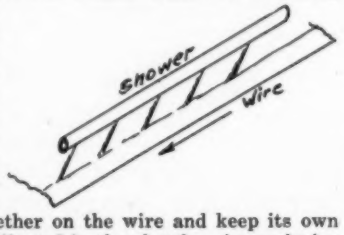
Beater Chest Gauge

IN A mill making a wide variety of grades and weights of paper, it was found desirable to supply stock to the machine at different consistencies. This was regulated largely in the beater chest by an adjustable gauge. A known quantity of stock is dumped from the beater and the chest filled with water to the desired height when an electric alarm is given. The gauge runs up through the beater room floor and can be set to ring the bell indicating that enough water has been run in at any desired level.



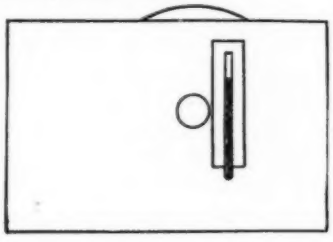
Water Deckle for Fourdrinier Machine

A PATENT has been recently taken out for a water deckle which may be used on a Fourdrinier machine eliminating the usual rubber deckle. A small shower pipe with a fine shower directed to hold the stock in place on the wire is placed at the point where the stock runs from the slice. The shower extends from the slice to the point where the paper is sufficiently formed to hold itself together on the wire and keep its own edge. The principle is indicated in the sketch. An exclusive license to make and sell the above in the United States has been granted to the Valley Iron Works, of Appleton, Wisconsin.



Gauge for Cylinder Vat

AS AN aid to the machine tender on a cylinder machine making light weight papers, a gauge to indicate the level of the water inside the cylinder is sometimes used as a guide in regulating the suction uniformly. When a little coloring is put in the water and a white cardboard used for a background this is visible the full length of the machine room.



Roll Rack

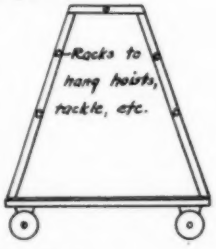
TO ELIMINATE piling spare rolls and unpiling them again to sort them, the rack shown herewith has been used. The rack occupies a very small floor space and all of the rolls are available. Short lengths of inch and a quarter pipe are placed loosely in holes in the racks so that they may be easily removed to take any size or length of roll. For handling heavy rolls, a chain hoist is suspended from an I beam above the rack.

Saving the Jordan Plug

TO PREVENT the iron from eating out the wood and to save the end and the life of the plug, remove about eight inches of wood from the small end and replace it with lead. When new fillers are required, the lead after removing can be melted and used over again.

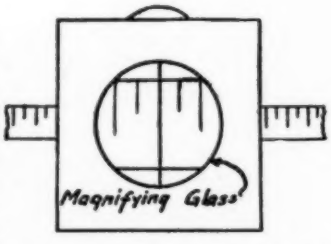
Rack for Rigging Equipment

SOME mills have found a rack similar to the one shown convenient for keeping rigging equipment together and in proper shape. Some of these racks are placed on wheels and taken to and from the job by a laborer. After the millwrights or other skilled men are through, the equipment is picked up by the rigging gang and taken back, making the work easier and saving time.



Reading Glass for Cutter Scale

IN THE operation of a paper cutter, there is a possibility of spoiling a considerable amount of paper if the sheets are not cut to the exact size. To eliminate any errors in reading the steel tape, a magnifying glass is used in the manner indicated. The glass is carried in a metal frame with a light attached to the top so that the divisions on the scale can be accurately lined up with the hairline on the glass.

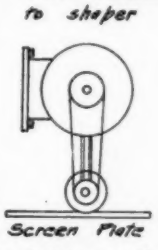


Retaining Moisture on Wire

IF TROUBLE is had with the stock when the water is leaving on the wire before it reaches the suction box, it has been found helpful to use less table rolls. This will give the stock a tendency to retain the required moisture before it reaches the dryers. The practise has been to remove every other table roll or more until the trouble is eliminated.

Recutting Screen Plates

IN ISOLATED mills where it is inconvenient to ship screen plates from the mill to be recut, the device shown herewith has been used. A quarter horsepower motor with an attached frame holding the fine saw used for cutting the plate is attached to a shaper in the machine shop. This simplifies the operation and as many as ten plates are recut in a day.



Cooling a Hot Box

IN THE case of a hot box, it is recommended to use a tablespoonful of muriatic acid on the bearing and to leave it run for two minutes, after which the journal should be lubricated well with oil until the acid is all washed off. This will smooth the bearing and remove all foreign matter sticking to the journal.

A New Rubber Covering for Felt Carriers and Tube Rolls *

By R. H. WHITNEY

The B. F. Goodrich Rubber Co., Akron, O.

OVER a year ago, experiments were started with the idea of furnishing the paper industry a rubber covering for felt rolls which would eliminate costs that necessarily enter into the building of a press roll but seemed uncalled for in felt roll service. For a long time, mills have been appreciating the advantages of rubber covered felt rolls over wood, iron, or brass. The roll builders naturally covered these as they were in the habit of handling press or couch rolls, merely cutting down the thickness and quality of the rubber. However, in addition to the actual covering costs, the cost of boxing and shipping are considerable, and the overhead labor and grinding in making a cheap roll are proportionately greater than in putting on a high-quality thick cover.

A study of the service required of a felt carrier roll showed that there was never any great pressure or force exerted that would tend to pull the cover loose from the roll core and that vulcanization of the rubber to metal with a hard rubber base is entirely unnecessary.

The main function of a rubber cover on a felt carrier roll is to provide and maintain a smooth, clean surface which will have the least wearing effect on the felts. This meant that a rubber of a quality that would not check with age would be preferable, and since the wear on a rubber covered felt roll is negligible, a thin cover of a better compound with good aging quality would be more practical than a thicker cover of poor quality stock.

From a standpoint of giving the maximum service, it seemed then that we were after a cover that would maintain a smooth surface for years, cushion the felt, and have adequate adhesion to the core for felt roll work.

A live resilient rubber of similar nature to that used for withstanding the abrasive wear in sand blast hose, made possible cutting the thickness to a minimum with no danger of the cover showing wear or surface checking. Curing a rubber of this kind over a polished steel mandrel and then turning the resulting rubber sleeve inside out, produced a surface smoother than can be attained by the finest grinding on a rubber surface. We were then able to entirely eliminate grinding costs, and keep our material costs as low with the higher quality stock as with the heavier cheap covers.

Laboratory experiments were run and we found that by applying a sleeve of this type under slight tension, we could easily get even more adhesion than was needed for felt roll work. There was, however, the danger of tension affecting the wearing quality of the rubber and shortening its life. Gradually by experimenting with compounds of various resiliency and hardness, these factors were eliminated, and by proper proportioning of the diameter of the rubber sleeve to the roll core and applying a coating of shellac to the core before slipping on the sleeve, a rubber covered roll was produced that would last for years in felt carrier service.

The problem of eliminating boxing, and shipping back and forth the cores, had really been solved in the simplification of applying the rubber cover. Paper mill men entirely unfamiliar with working rubber were able to apply a small Slip-Sleeve in less than four minutes, another mill using larger rolls required twenty minutes to put on the first one because they allowed the shellac to set, the second one went on in ten minutes. The whole application is extremely simple, the end of the sleeve is easily started over the roll by hand, then a compressed air nozzle is inserted between the rubber and the roll, the air pressure is turned on, the rubber expands and can be slipped easily along the core, the fresh shellac actually acting as a lubricant. When the cover is over the full length of the roll, the air pressure is removed and the rubber sits snugly in place. The shellac of course increases the adhesion and since the tight fit of the cover aids rather than works against the setting of the shellac, the resulting anchorage is greatly increased.

Three of these rubber sleeves were put on about a year ago and have been in continuous service ever since. There is absolutely no indication of any wear and they are as tight and firm as when applied. Approximately twenty more have been in operation for from four to eight months and the results are the same in every case. There is no reason why these rubber covers should not last for years and yet checking into the many advantages incorporated in this form of cover it would be possible to replace them every sixteen months and still save the entire cost over the ordinary rubber covered felt rolls being used. In addition to this the smoother surface and better cushioning will give the felts increased protection.

There is some debate as to whether the advantages offered on tube or table rolls is not of even greater importance than their use on felt rolls. The Slip-Sleeve at once makes practical the use of aluminum tube rolls, doing away with the trouble from surface pitting of the aluminum and electrolytic action between the aluminum and wire in the presence of water. The advantages of a light roll have always been understood and an aluminum roll with rubber sleeve weighs approximately one-fifth as much as the usual brass covered tube roll of equal size.

The rubber cover offers other advantages which are applicable to brass as well as aluminum rolls. It cushions the wire reducing wear to an absolute minimum. The soft rubber pressing the lower side of the wire tends to keep the wire open, also to provide a slight suction as the wire leaves the rubber surface. The driving of the roll by the wire becomes positive through a slight meshing action rather than by rolling friction and both wear and danger of rolls sticking is reduced.

The suitability of the Slip-Sleeve method of application has been demonstrated by rolls running for the past ten months. Merely being slipped on to the rolls with no shellac or adhesion other than given by the slight tension of the rubber. There has been no creep and the cover is as smooth and perfect as when applied. The rubber of course is not affected by the acids used to clean the wire.

In addition to the use of the Slip-Sleeve on plain felt rolls and tube rolls, several experimental installations have been made on worm rolls. These have not gone far enough to determine their practicability, but present data indicates they will work successfully with slight modifications in the shape of the raised worm.

*Patent Pending.

New Form of Waste Paper Pulper

IN A NEW type of waste paper pulper, on which French patent 581,043 has been taken out by a German firm of paper machinery manufacturers, provision is made for heating the apparatus throughout its entire length. In the ordinary type of waste paper pulper, hot water is introduced at the waste paper inlet. In the new form of pulper the machine can be heated by steam at different points, either directly or indirectly, the grooves between the two longitudinal portions of the machine being so constructed as to act as steam chambers. The increase in pulping chamber correspondingly lowers power consumption.

Summer Meeting of the Canadian Technical Section

THE success of the summer meeting of the Canadian Technical Section, which was held at Ottawa, St. Andrews, Lachute and Montreal on the 25th and 26th of June, exceeded the fondest hopes of the organizers, and is the best proof of the popularity of this annual function. For the first time in several years, no summer meeting was held in 1924; but after this year's manifestation there is little likelihood that it will be omitted again.

The weather man frowned down on the meeting, and did his very worst on the first day. But he was unable to dampen the spirits of the crowd, and on the second day he gave up the job as hopeless, so that the visit at the Eddy and Ayer mills and the long motor drive into Montreal took place under ideal weather conditions.

Members began to assemble at the Chateau Laurier, Ottawa, from north, south, east and west on Thursday morning, and had practically all arrived by noon. After they had registered, motor cars provided by the entertainment committee took them out to the Ottawa Hunt and Golf Club, where a number of enthusiastic golfers who had come down the previous evening so as to enjoy a morning on the course had already preceded them. Here they were entertained at luncheon as guests of Mr. John R. Buchanan, president of the Capital Wire Cloth and Manufacturing Co.

Paper on Wood Consumption Creates Lively Discussion

Next came the only real serious business of the meeting, when R. W. Sterns, of the Service Division of Abitibi Power and Paper Co., at Iroquois Falls, Ont., read his paper on "The Yield-Density Method for the Determination of Wood Consumption." As had been hoped and expected, this much-debated topic gave rise to quite a lively discussion, in which took part Messrs. Stephenson, Kloss, Mertz, Keay, Bearce, MacNaughton, Cameron and Costigane. The situation is very much like the one in the fable of the mice and the cat, when it came to tying the bell to the cat: everybody recognizes that the present situation is most unsatisfactory and much is left to guesswork or approximations of more or less doubtful accuracy. Something must be done to tie in the volumetric measurements of the logs in the woods and at the jack-ladder with the weight measurements of the finished pulp or paper as it leaves the mill, so as to get a reasonably accurate figure for the yield of finished product from raw material. But no one yet seems to have evolved a method or system which would rally a majority of those interested in the matter.

The discussion clearly showed that the subject is being given much thought and consideration in many quarters, and a satisfactory solution is bound to be found sooner or later.

Mr. Kohl called attention to the advisability of forming a standing committee on power, and Mr. MacNaughton described some of the very valuable work which had been carried on in the course of the last few years by the Committee on Light, Heat and Power of the Technical Association across the line. In order that there might be as little delay as possible, at the suggestion of Chairman Gain the matter was referred to the Executive Council for action.

Tribute Paid to Pioneer Workers

Before adjournment, Chairman Gain briefly referred to the fact that it is now ten years since the Technical Section was organized, and he paid a feeling tribute to the work of Mr. C. B. Thorne and of Dr. J. S. Bates, whose untiring efforts had done so much to arose the technical men to the advisability and necessity of forming themselves into a Section of the Patent Association. It was most fitting, he said, that these ten years of effort and progress had been crowned by the formation of a new Section of Industrial Research for initiating and directing research work of value to the industry, for co-ordinating the work of the various members of the association and for co-operating with the work carried out by the Government in the Forest Products Laboratories of Canada, at Montreal.

Visit to Capital Wire Company Plant

Next came a visit to the plant of the Capital Wire Cloth and manufacturing Co., where the wires for many Canadian paper mills are manufactured. The various operations from the winding of the wire on to the bobbins down to the packing of the machine wires ready for shipment were fully explained. One of the most interesting features of the plant is the huge loom which can weave a wire cloth 258 inches wide, and which was in operation at the time of the visit. When it is considered that the widest paper machine at present in operation takes a wire 242 inches wide, and the widest one on order will take a 245-inch wire, it is evident that the Capital Wire Cloth and Manufacturing Co. are more than keeping abreast of the times. What is more, they have provided room, in the new building which was completed shortly before the installation of their big loom, for placing an even bigger one as soon as further advances in paper machine design will make such a step advisable.

After the dinner that evening, the section presented Mr. Buchanan with a token of their esteem and appreciation for his hospitality, at the Ottawa Hunt and Golf Club and at his plant. This took the form of an ash tray fashioned from a piece of wood which had formed part of the first paper mill which started operations at St. Andrews East, Quebec, in 1803.

Book Plates Presented to Authors of Text Books

Complimentary book plates were presented by name, by Mr. MacNaughton, to the forty-five authors who contributed to make the "Manufacture of Pulp and Paper" the most authoritative and reliable book on the subject in the world. The text on the book plate and the names of those who received them are as follows:

"This Book is the property of.....(Name)....., One of the Collaborating Authors of "The Manufacture of Pulp and Paper," to whom, as a Mark of its Appreciation, this Plate is Given by the Joint Executive Committee on Vocational Education of the Pulp and Paper Industry of the United States and Canada."

W. D. Somerville, Paper Finishing; Edwin Sutermeister, Paper Testing; J. O. Ross, Heating and Ventilation; J. W. Brassington, Paper Machines; Dard Hunter, Hand Made Papers; Robert O. Harper, Tub Sizing; Norman Clark, Paper Coating; James Beveridge, Preparation of Straw; Ed. T. A. Coughlin, Treatment of Waste Paper; Arthur B. Green, Beating; Clarence J. West, Bibliography; Judson A. DeCew, Engine Sizing; Ross Campbell, Loading; Carl Schneider, Paper Coloring (This subject was handled by a Committee of which Kenneth King was Chairman); Clarke Marion, Paper Coloring; Chas. G. Bright, Paper Coloring; Otto Kress, Paper Coloring; Kenneth T. King, Paper Coloring; J. N. Stephenson, Properties of Wood, Lubrication; R. Roy Turner, Preparation of Wood; H. J. Buncke, Groundwood; Bjarne Johnsen, Sulphite Pulp; Arthur Burgess, Larchar, Soda Pulp; Karl M. Thorsen, Sulphate Pulp; J. O. Mason, Treatment of Pulp; Max Cline, Pulp Testing; H. H. Hanson, Pulp Bleaching; E. C. Tucker, Preparation of Rags; Hervey J. Skinner, Water; H. E. Stafford, Electrical Equipment; J. J. Clark, Mathematics, Physics and Mechanics; J. S. Riddile, Electricity; T. L. Crossley, Chemistry; Rex W. Hovey, Properties of Wood; H. N. Lee, Properties of Wood; E. F. Doty, Pumps; C. C. Heritage, Paper Coloring; Frederick C. Clark, Paper Testing; Geo. A. Atkinson, Paper Testing; Frederick A. Curtis, Paper Testing; Charles A. Fourness, Paper Testing; John H. Graff, Paper Testing; Helen U. Kiely, Paper Testing; Sidney D. Wells, Paper Testing; Charles F. Rhodes, Paper Testing.

Diplomas to Graduates of Paper School

Finally, Mr. O. F. Bryant presented the diplomas to the first graduates of the Institute of Industrial Arts, Gardenvale, who are Messrs. C. W. Thomlinson of the Soo Mill of the Spanish River Pulp and Paper Mills; W. D. Littlefield of the Strathmore Paper Co., Mittineague, Mass.; D. M. Florence, Lincoln Paper Mills, Merritton, Ont.; and C. H. Obert, Hammermill Paper Co., Erie, Pa.

Visit to New Mill of Eddy Company

On Friday morning the party motored out to the mill of the E. B. Eddy Co. at Hull, where they made a tour of inspection of the new sulphite and paper mills. These were built in record time under the direction of H. S. Taylor and are the last word in efficiency.

The four acid towers, each one hundred feet high, work as four independent units, and the four streams of raw acid are fed together to the top of a small recovery tower, from the bottom of which they pass into the recovery tank and finally into the storage. All the relief, both liquor and gas, is sent to the recovery tank; the unabsorbed gas passes up through the small recovery tower, and any gas which still remains is sent to the suction side of fan which draws the burner gases from the coolers. No trouble is being experienced in the operation of this very simple system, and the efficiency and completeness of absorption is proved by the fact that the towers are filled with stone daily without interrupting operations, and the workmen who fill them are in no way inconvenienced by acid fumes.

Part of the sulphite is used in the newsprint mill, and part is bleached for the manufacture of specialties. The stock to be bleached is lapped on a wet machine, and the laps are shredded and sent directly to a Fletcher bleacher (without dilution with water), where the addition of the bleach liquor reduces the consistency to 17.5 to 18 per cent. The stock is circulated until the bleach is exhausted, which generally requires between three and a half and four hours. This installation is working most satisfactorily.

The 234-inch Walmsley newsprint machine was started up only about six weeks ago, and from the very start has been making a very fine sheet. There are still a number of minor adjustments to be made; but when everything is taken into consideration the machine is making a most creditable showing. The stock consistency is kept constant by means of consistency regulators, and the groundwood, sulphite, color and alum mixed in proper proportions by means of a Trimbey and Allen proportioning and metering system. The mixed stock then passes through four Bird screens and is delivered from the flow box on to the 66-foot wire, where a large portion of the water is removed by the twenty 10-inch table rolls, by the six suction boxes, which are set right close up against one another, thereby saving space on the machine and at the time reducing the wear on the wire, and by the large suction couch roll. The wet sheet is put through three presses, without being reversed at the last press, and is completely dried by means of forty 60-inch dryers. The sheet is finished by passing it through a ten-roll calender stack, equipped with usual safety devices, and is finally converted into finished rolls of suitable size by means of a Walmsley slitter and rewinder which can operate at 2,000 feet a minute. The machine drive is a Harland interlock, sectional electric drive, and is practically a duplicate of the one on the machine at the Kenora mill of the Backus-Brooks Co. An asbestos-gypsum hood is provided over the dryers, and carries the vapor-laden air to Briner economizers, which use the escaping heat to raise the temperature of the incoming air.

Felt Mills of Ayers, Ltd., Visited

At one o'clock the party boarded the train for St. Andrews East, Quebec, where motors provided by Mr. John T. Ayers, president of Ayers Ltd., Lachute, Quebec, were waiting to take them to the felt mills at Lachute.

The whole plant was thoroughly inspected, from raw wool storage to the packing of the finished felts, and proved most interesting, some of the earlier stages in the manufacturing process bearing a certain analogy with some of the stages of pulp and paper manufacture. It was also very interesting to note the similarities and differences between the operations involved in wire and felt weaving. The visits to these two plants where paper machine clothing is made served to give an insight into the great care which is exercised at every step in order to insure that the finished product will be as nearly perfect as possible and will meet the particular requirements of the conditions under which it is to be used.

After this enjoyable visit, the party motored into Montreal, and before separating to their respective homes were entertained at dinner as guests of the parent association. The meeting was unanimously voted as the very finest that has yet been held; and all are looking forward to the pleasure of meeting again on a similar occasion next year.

Respects Paid to J. R. Booth

On the way back from Eddy mill, the Executive Council called upon Mr. J. R. Booth to pay their respects and offer him congratulations on reaching his ninety-ninth year; and they presented him a clock, the wooden frame of which had formed part of the first Canadian paper mill erected at St. Andrews East, Quebec, in 1803.

List of Attendants

Allen, F. L., DeGrasse Paper Co., Pyrites, N. Y.
Barclay, R. W., Western Quebec Paper Co., Montreal.
Bay, Dr. Chr., Riordon Corporation, Hawkesbury.
Bearce, G. D., Newsprint Service Bureau, New York.
Beck, Edward, Canadian Pulp & Paper Association, Montreal.
Bowness, A. O., E. B. Eddy Co., Hull, Que.
Bryant, O. F., Laurentide Co., Grand' Mere, Que.
Buchanan, C. A., Donnacona Paper Co., Donnacona, Que.
Buss, C. F., Provincial Paper Mills, Thorold, Ont.
Cadman, A. E., Canadian Pulp & Paper Assn., Montreal.
Cameron, E. P., Forest Product Laboratories, Montreal.
Charlton, E. A., DeGrasse Paper Co., Pyrites, N. Y.
Copping, A. B., DeGrasse Paper Co., Pyrites, N. Y.
Costigane, A. P., Ontario P. & P. Makers Safety Assn., Toronto.
Cowles, E. B., Taylor Stoker Co., Montreal.
Crabtree, D., Beauharnois, P. Q.
Dawe, A. L., Canadian Export Paper Co., Montreal.
Florence, D. M., Lincoln Paper Mills, Merritton, Ont.
Gain, C. N., Canadian Vegetable Parchment, St. Catherines, Ont.
Harpell, J. J., Pulp & Paper Magazine, Gardenville, P. Q.
Howard, F. S. B., Taylor Stoker Co., Montreal.
Hill, F. C., Garden City Paper Mills, St. Catherines, Ont.
Hinzke, A. G., Provincial Paper Mills, Port Arthur, Ont.
Karberg, H. E., Lincoln Mills, Ltd., Merritton, Ont.
Kay, S. E., DeGrasse Paper Co., Pyrites, N. Y.
Keay, H. O., Laurentide Co., Grand' Mere, P. Q.
Kloss, R. E., Spanish River P. & P. Co., Sault Ste. Marie, Ont.
Kohl, G. W. H., Spanish River P. & P. Co., Sault Ste. Marie, Ont.
MacLaurin, J. G., Riordon Company, Hawkesbury, Ont.
Littlefield, W. D., Strathmore Paper Co., Mittincague, Mass.
MacNaughton, W. G., T. A. P. P. I., 18 East 41st St., New York.
McCully, R. C., H. S. Taylor Co., Montreal.
Mereweather, C. W., E. B. Eddy Co., Hull, Que.
Mertz, J. P., Spanish River P. & P. Co., Sault Ste. Marie, Ont.
Mess, J., Dominion Flow Meter Co., Toronto.
Niklasson, C., Western Quebec Paper Co., St. Andrews East.
Papineau-Couture, A., 2 Place d'Youville, Montreal.
Payne, J. M., Forest Products Laboratories, Montreal.
Phelps, M. W., Lincoln Mills, Ltd., Merritton, Ont.
Pryor, R. W., Pulp Bleaching Corp., New York.
Quaal, A. E., Donnacona Paper Co., Donnacona, P. Q.
Reid, C. de W., Western Quebec Paper Co., Montreal.
Shaffrey, L. B., DeGrasse Paper Co., Pyrites, N. Y.
Simpson, A. W., DeGrasse Paper Co., Pyrites, N. Y.
Stephenson, J. N., Pulp & Paper Magazine, Gardenvale, P. Q.
Sterns, R. W., Abitibi P. & P. Co., Iroquois Falls, Ont.
Warburton, J., Charles Walmsley Co., Montreal.
Wardle, E. B., Laurentide Co., Grand' Mere, P. Q.

The Cause and Cure for Wrinkles in Surface of Rolls of Paper

By JAMES A. CAMERON
President, Cameron Machine Company

ANYONE who handles rolls of paper, either as a producer of them in paper mills or in paper converting plants, also those who rewind rolls of paper in plants manufacturing paper products, are familiar with the fact that ridges, or welts, or wrinkles, as they are variously called, often appear in the surface of a finished roll after the roll has been wound and removed from the winder.

When the roll is just finished, there is seldom any trace of these welts, but they begin to appear immediately afterwards;

Fig. 1—Roll of bond paper showing wrinkles

in some cases it takes hours, in other cases days for them to make their appearance. See Figure 1. These welts extend to various depths downward from the outside of the roll, in some cases only ⅛" or so, and in extreme cases ½" or even ¾". It is also a familiar fact that when the outside layers of a roll which is so affected have been removed to a depth where the roll is perfectly free of these welts, the process will begin all over again; and within a brief time, possibly only a few hours, the roll is again corrugated on its outside surface quite as badly as in the beginning. If the outside plies are again removed to the depth of the welts, the whole process repeats itself and will keep on repeating clear down to the core of the roll.

It is safe to say that these welts in some mills or converting plants are the cause of more broke and annoyances than any other source of loss in the utilization of rolls. Of course this "welting up" does not appear in all kinds of paper nor in every roll of the kinds of paper that are liable to this tendency. In the main, it would seem that any kind of paper, excluding, of course, such weights as might properly be classified as paperboard, can develop these welts when improperly wound into rolls; and, on the other hand, the proper winding of rolls can in great measure prevent this tendency, even when producing rolls of paper which is most prone to welt up into corrugations.

It might be in order to first discuss the cause for the formation of these welts, and then the most effective preventive means.

Cause of Welting Up Traced to Source

Whether the roll is wound at the end of a papermaking machine direct from the reels, or behind a supercalender, coating machine or the like, or whether it is formed by a reminding operation where the web is fed from a jumbo roll which has previously been wound, the treatment of the web in the process of winding is basically the same. That is to say, there is always a tension or drag down the length of the web so that it can be kept under control in going forward to the roll which is being wound. In making the paper on the paper machine, it is worth considering what actually happens to this web through the successive handlings it has to undergo either in the making or the converting of the paper. It is always a case of a drag strain lengthwise on the web.

After all is said, paper is a somewhat elastic substance. some kinds more elastic than others. For instance, bond papers, dry or water-finished manila paper, also kraft paper, have a greater degree of elasticity and will also stand a greater tension than newspaper, for instance. It is also true that in the first mentioned papers the tendency to "welting up" on the outside of the finished roll is apt to be greater than in the case of newspaper, although the latter is by no means free of this tendency at all times. The actual fact is that the drag on the web, which is necessary to keep the web flat and under control, must certainly have some effect on the web. The paper travels under tension from the last dryer of the paper machine to the calenders, and it encounters another tension between the calenders and the reels, and again between the reels and the winder. If the paper is rewound later on in converting it, it encounters still another drag under tension.

Theory of Cause Corresponds with Facts

In theory it is reasonable to suppose that these draw strains have some effect on the web, and that this effect would be to slightly narrow it from its normal width; that is to say, from the width which the web would naturally assume if it were laid out flat under no draw strains whatever. The web lands on the roll while under the influence of this drag. The theory ties with the actual facts as proved up by cutting a band of paper, say 2" or 3" wide, across the face of a corrugated roll. Upon gently smoothing it out, it will be observed that a strip so cut from a roll of bond paper, say, for instance, 100" face-width, will actually measure 100⅛", 100¼", or in some cases 100⅜". The Doubting Thomas will say that this is due to the fact that the welting process has actually stretched the width

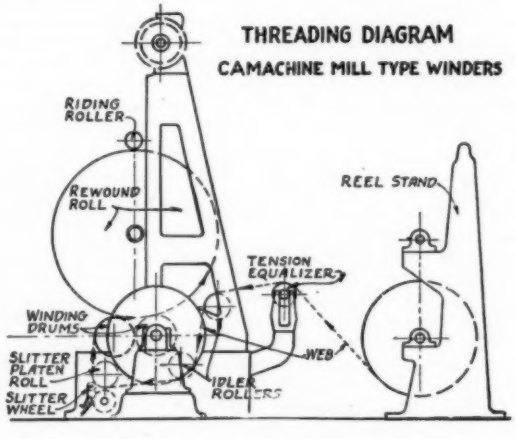


Fig. 2—Typical end elevation of Camachine mill type winders

of the paper; but the answer is that going back of this test and proving up anoher way, it will be found that the width was actually there prior to the formation of the wrinkles. In other words, the actual or normal width of the web is wider than the face-width of the roll after the paper is wound. This can be proved up by making a pencil mark near the edge of one side of the web as it passes from the calenders to the reels, with a corresponding mark 100" from same on the other side of the web. That is to say, an air line from the mark on the one side to the mark on the other side would be exactly 100". When later on this marked portion comes over onto the roll on the winder, it will be found that these marks are less than 100" apart; but when a strip is cut off and laid flat as above, the marks are more than 100" apart.

Another factor to be emphasized here is that there is actually more than 100″ width in the web in between the marks which are spaced 100″ apart in an air line, as there is always a certain amount of wave, or cross slack, or "draw wrinkles." This cross slack is seen between the dryers and the calenders, between the calenders and the reels, and between the reels and the winder. It would seem, therefore, that the marks on the roll of paper ought to be farther apart than the 100″ mentioned when the paper lands on the roll, on account of this very fact that the paper between the marks is at least 100″ wide in an air line, plus a certain amount allowing for these draw wrinkles, whereas the marks are less than 100″ apart when measured on the roll.

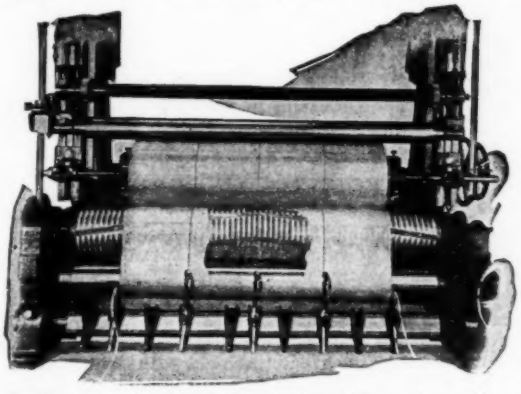


Fig. 3—Phantom view of grooving in front drum, Camachine mill type winders

The above means, in plain terms, that a width of web in excess of 100″ has actually been wound into a roll which is less than 100″ wide.

Welts Develop After Roll Is Wound

To all appearances, the outside surface of this roll is smooth and regular and perfectly cylindrical, and so it is for the time being. It must be borne in mind, however, that there has been wound into this roll a web which is actually wider than 100″ between the marks, that this winding has been done under continual draw strain, and that the paper, if it had its own way, would like to resume its normal width. This would be its width if it were perfectly flat and free of the stretch or draw wrinkles that are present in each of the plies of paper which have been wound into the roll from the center to the last outside ply.

When the roll is finished and set aside, the "welting up" process begins within a comparatively short time, if it is to occur at all. Close observation will disclose that the welting occurs first in the form of a slight puckering or ridging in one or two of the very outside plies of paper. Within a very short time it is observed that instead of one or two of the outside plies, three or four or more have followed the example of the outside ply, and that instead of a local puckering or blistering as at the very start, actual ridges or welts begin to build up and to elongate themselves into welts a few inches long, then longer, until part of the way around the roll, gradually becoming irregular circles, in some cases clear around the roll. These ridges become progressively deeper and firmer, even to a depth of ¼″ or more, as the under plies begin to follow the lead of the outer plies, and soon become welts which permanently wrinkle or emboss the surface of the paper and cause more actual broke loss than any other single source of broke.

Welts Develop from the Outside Inward

This is nothing more or less than the reaction of the paper against the draw strains that have been built into it. The natural surface width of the paper is actually wider than the surface of the roll. The tendency to resume its normal width begins to operate, naturally, from the outside first, with the result that in seeking to widen out to its normal width, there is a slight creeping of the outside plies from the center out towards each end; and where this creeping is halted through friction contact after proceeding only a short way, the web buckles upward slightly at such points. Then the next ply below reaches this same point and buckles upward, and so on until the welt or ridge is built up into a corrugation which would resist the blow of a hammer to flatten out.

There are many theories put forward by those who have to contend with this "welting up" tendency, and many of these theories, although apparently contradictory on first examination, really tie together and support each other. For instance, some say that these welts come from exposure of the outside of the roll to moist air; others say dry air does it. In the one case they are called "expansion wrinkles," in the other "contraction wrinkles." They are primarily due to the contraction of the width of the web prior to its being wound into a roll, and the later tendency of the web to expand to its normal width after it is on the roll. Certainly, both theories are, in a sense, right, but certainly exposure to the air is not their prime cause. The contraction of the width of the web temporarily, and its later effort to expand, is the real cause.

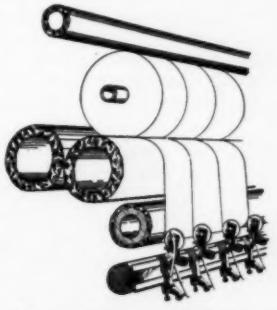


Fig. 4—Diagram of patented Camachine principle of slitting and winding

Preventive Measures for Welting

So much for the cause—let us now consider preventive means for these troublesome pests to both makers and users of roll paper.

It would seem, in view of these facts, that the complete and final cure would be to actually flatten out or in some way stretch out the web to its normal and natural width prior to its passing onto the roll—in other words, set up a lateral pull on the web to offset the lengthwise pull referred to above. This, however, is by no means a simple proposition.

A so-called bow spreader will certainly not do this, as a bow spreader tends to narrow the distance between the edges of the web by bringing the web over a curved or bowed surface. In no sense does a bow spreader actually spread the web in width. There is, therefore, no hope in the bow spreader as a means of eliminating or in any way lessening the tendency to the welts we are considering. In fact, the bow spreader tends to aggravate them by narrowing the distance from edge to edge and by stretching unduly the central portion of the web.

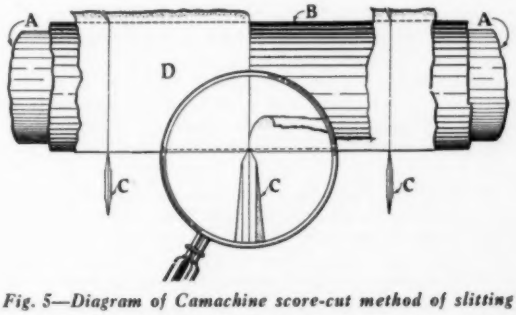


Fig. 5—Diagram of Camachine score-cut method of slitting

A method of spreading by means of spirally grooved guide rolls, or by means of nip rolls placed at an angle with the path of the paper, tending to draw the sheet out laterally as it passes towards the winder, is, in a measure, practicable. The spiral grooves are practicable in some cases, although objectionable on account of their unfavorable action on the finish of certain kinds of paper. The nip rolls are practicable on extra heavy weight sheets, but not on light weight sheets; and the wrinkling is apt to be greater on the light weight than on the heavy weight sheets, as the light weight is more affected by the drag and the tendency to crosswise slack.

No universally successful means exists for the actual spreading of the paper laterally which is dependable in each

and every case, but one thing is universally helpful, and that is to reduce the drag or tension on the web to a minimum in the roll-winding process—that is to say, to so design the winder that it will produce firm rolls with the least possible draw strain on the web. Furthermore, provision should be made in the winder for flattening the surface of the web so that it is free at least of the "draw wrinkles" or slack across its width, prior to its passing to the roll that is being wound.

Referring to the first proposition as to winding a firm roll with the least possible tension on the web, it is obvious that the web should not be slit into sections at a point far distant from the point where the winding is done. For best results

Fig 6—Showing the smoothing action of patented Camachine system of grooving

in mill type winders, the slitting apparatus must be placed immediately under the front winding drums (see Figures 2, 3 and 4), so that the slit sections of paper do not have to travel far from the point where they are slit to the point where they are wound. There is obviously more chance for the slit sections to be affected by the draw strain through a long draw than through a short draw. Furthermore, slitting at a distance from the point where the winding is done is disadvantageous for the reason that any one of the slit sections, when, for instance, the original web is being divided into two, three or more slit sections, can and often does stretch slightly prior to reaching the point of winding. This in turn calls for an increased draw strain on the whole web by tightening the tension on the reel brake.

Faulty Winding Methods Chief Cause of Welts

The result, therefore, is that from the very fact of slitting too far from the point of winding, some of the slit sections often have to bear a greater burden of draw strain than would be necessary if the whole web were brought close to the winding before slitting into separate sections. This in turn aggravates the tendency to welts on account of this excess tension.

It is interesting to note that excessive tension makes excessively hard rolls, and these hard rolls are the most prone to develop the welts or wrinkles, not because they are hard, but because excessive tension was used in winding them so hard. This excessive tension reacts in the form of welts, the excessive hardness having nothing to do with this result.

It is for this reason that an efficient winder must handle the web with the least possible tension on all the slit sections. The web should be threaded **over** the face of the front drum, as in Figures 2, 3 and 4, rather than **between** the drums. When the latter is the case, the roll of paper, as it builds up, tends to become progressively harder through the increase of its own weight, helped by the down pull which seats the roll of paper still more firmly on the drums and adds to the burden of increased weight, plus the factor that when the web is threaded **between** the drums, one of the drums (usually the front drum) is necessarily run at a higher surface speed than the rear drum. What happens, therefore, is that the threading of the web **between** the drums rather than **over** the face of the drums, tends to produce an excessively hard roll, which is as much as to say, a roll having too much draw strain on the web. That is the kind of roll which is the most prone to welting up after being wound. The evils of threading between the drums are independent of the relative position of the slitters, which in the old style of winder are usually at a distance in the rear of the machine, making matters worse, as already pointed out.

The Camachine Winder Principles Described

The nearest approach to a complete answer to the troublesome and broke-producing welts is found in the type of winder where provision has been made for handling the web with the gentlest possible strain on same, prior to the slitting and winding. This is realized in machines where the slitting is done close to the point of winding, and where the web is threaded over the front drum with a counterweighted riding roller resting on the upper surface of the rewound rolls as they build up in diameter. See Figures 2, 3 and 4.

In mill type machines built by Cameron Machine Company, with which the writer is connected, the "two-drum, riding-roller" system of winding has been proved by many years of experience and development of same; and this system of winding has been supplemented by a patented system of grooving in the front one of the two drums. See Figures 3, 6 and 7.

These grooves consist of very shallow and wide depressions in the surface of the drum, running spirally close together from the center outwards to each end. They insure the complete separation of the rewound rolls, and they have the further effect of insuring the perfect and even distribution of the crosswise slack or "draw wrinkles" described above, which may not have been removed by contact with the surface of the guide rollers which steer the web to the point of slitting and winding. One of these guide rollers is provided with self-adjusting angling means so as to insure the flat, smooth draw of the web with a minimum of tension on any portion of it.

Coupled with these spiral grooves in the surface of the front drum, is a very wide and very shallow groove running slantwise from the center each way, at a slight angle to the axis of the drum, as shown in Figures 3 and 6. These grooves are provided for taking care of slack edges which frequently occur in the web, passing this slack along to the roll without permitting it to accumulate in front of the roll and form into wrinkles at the edges, and at the same time permitting the

Fig. 7—Typical installation, Camachine mill type winder

web to draw flat and even under the minimum amount of tension.

The slitting method, which is combined with this roll-winding method, is the so-called Camachine "Score-Cut" method. Its location is directly below the front drum. See Figures 2, 3, 4 and 7. This method permits of the slitting of the web under a very gentle draw strain, whereas the old style method of overlapping rotary shears wherever they are placed, near the front drums or, as usual, at a distance well in the rear of the two drums, calls for a rather stiff tension on the web at all points. Especially is this the case on the edges of the web. The rotary shear method of slitting is objectionable, in addition to other reasons, because at all times it demands a greater drag or strain on the web than is necessary with the

Camachine "Score-Cut" method of slitting, where the web is firmly supported on the surface of a smooth platen roll and is independent of any excessive strain. The slitting is done while the paper is in contact with and supported by the smooth face of this platen roll.

Correctly Designed Winders Combat Welting Tendency

It sums up, therefore, that the welts or corrugations we have been considering arise from the tendency of the web to contract in width under the draw strains it has to encounter on its path to the finished roll. It follows that any method by which these draw strains can be lessened is a step in the right direction. A winder which goes to the limit in the matter of handling the web gently has the ability, for that very reason, to produce rolls in which the wrinkling tendency has been reduced to a minimum and in most cases entirely eliminated.

Slitting and roll-winding machines, which are designed and built on correct basic principles, not only handle webs of paper in a way calculated to deliver rolls which are free of welts and other defects, but the production cost of these rolls is less for the reason that correctly designed machines are simpler, swifter and more dependable to operate.

Chemical Engineers Meet at Equipment Exposition in Providence, R. I.

THE Association of Chemical Equipment Manufacturers of 1328 Broadway, New York, staged a Chemical Equipment Exposition at the State Armory, in Providence, Rhode Island, during the week of June 22-27. Special interest was taken in this exposition owing to the presence in Providence of a number of visiting chemical engineers who attended the seventeenth semi-annual meeting of the American Institute of Chemical Engineers which had headquarters at the Providence-Biltmore Hotel and held meetings there and at Brown University on Wednesday, Thursday and Friday, June 24, 25 and 26.

Except for papers and discussions on water pollution and industrial water, there was little of direct interest for paper mill chemists, engineers or superintendents at the sessions of the American Institute of Chemical Engineers, though Hugh K. Moore, of the Brown Co., J. V. N. Dorr and Ralph H. McKee are officers of the Institute. About 100 members, guests and visitors attended a dinner in the ballroom of the Biltmore Hotel, on Tuesday evening, this function being under the auspices of the Chemical Equipment Association. The speakers at this dinner were: Dr. H. E. Howe, editor of the Industrial Journal of the American Chemical Society, and E. H. Mehren, vice president of McGraw-Hill Co., Inc.

The Association of Chemical Equipment Manufacturers is headed by G. O. Carter, consulting engineer, with the Linde Air Products Co. of 30 East Forty-second street, New York, which had a booth at the exposition where demonstrations were given of the applications of oxygen and oxyacetylene cutting and welding. The secretary of the association is Roberts Everett, who is also connected in an advisory capacity with the Pulp & Paper Mill Equipment & Mill Supply Association.

Displays at the Chemical Equipment Show

Exhibits of interest to pulp and paper manufacturers were not numerous at the Chemical Equipment Exposition, the following being a summarized account of the displays:

Paul O. Abbe, Inc., 71 Murray Street, New York, showed pebble and porcelain jar mills and mixing machinery used in mill laboratory work for the testing of pulps.

The Bristol Co., Waterbury, Conn., had a good display of temperature and humidity recorders, recording tachometers used in material handling, pyrometers and other instruments used in technology of heat, besides pneumatic and electric tachometers and psychrometers and temperature controllers applicable to the pulp and paper industry.

Buffalo Foundry & Machine Co., 1575 Fillmore Avenue, Buffalo, N. Y., included in their exhibit evaorating machinery applicable to the pulp and paper industry and distributed circulars of information on drying and evaporating processes.

Carrier Engineering Corporation, 750 Frelinghuysen Avenue, Newark, N. J., exhibited the Carrier Ejector Processing and Drying Cabinet and supplied data on humidifying and dehumidifying equipment such as are used in both the textile and paper industry. This firm is well known for its air-conditioning equipment which is used to some extent in paper mills.

Clipper Belt Lacer Co., Grand Rapids, Mich., presented models of belt lacers, belt hooks, belt cutters, with an electrically operating moving belt display built of aluminum.

The Dorr Co., 247 Park Avenue, New York, had an exhibit of models of the Dorr Thickener, the Dorr Agitator, besides other apparatus used in leaching and extracting.

Electro-Chemical Supply and Engineering Co., Paoli National Bank Building, Paoli, Pa., made an interesting display of acid-proof cement and brick, in addition to electrolytic cells applicable in the pulp and paper industry and distributed literature pertaining to artificial refrigeration by means of sulphur dioxide.

Charles Engelhard, Inc., 50 Church Street, New York, made a display of temperature recording devices, pyrometers and electric gas analyzers.

General Ceramics Co., 50 Church Street, New York, showed stoneware laboratory apparatus and other stoneware equipment capable of use in the pulp and paper industry.

General Electric Co., Schenectady, N. Y., had no special paper mill machinery apparatus on view, but exhibited fabroil gears and automatic electric arc welding motors and control with acid resisting insulation.

International Business Machines Corporation, 50 Broad Street, New York, was prepared to give data on statistical machines and showed electrical tabulating and accounting apparatus, besides automatic scales and weighing machines.

International Nickel Co., 67 Wall Street, New York, which is interested in introducing monel metal as a substitute for bronze in Fourdrinier wires and wherever bronze or brass screens are used, had literature for distribution and showed specimens of the metal.

Maurice A. Knight, Kelly Avenue, East Akron, Ohio, was represented with a display of acid-proof stoneware and supplied data on equipment of this kind applicable to the pulp and paper industry.

Lead Lined Iron Pipe Co., Wakefield, Mass., showed acid-resisting lead lined piping, valves and fittings used in the transmission or evaporation of acid liquids.

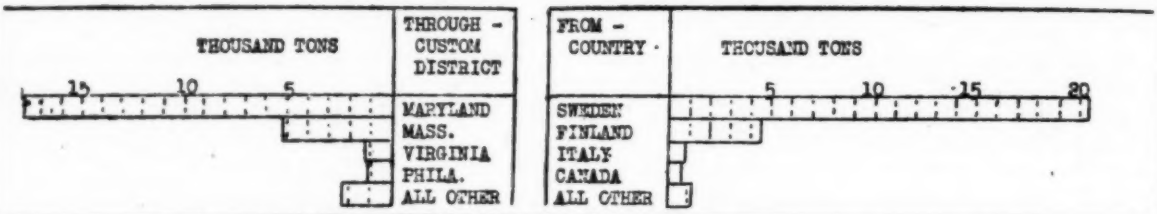
Resisto Pipe & Valve Co., 262 Bridge Street, East Cambridge, Mass., had specimens on view of lead, tin and silver lined piping and valves and lead lined tanks for use in the handling of acid or corrosive liquids.

T. Shriver & Co., Harrison, N. J., supplied literature on filtration, pumping and drying and exhibited a complete filtering plant for separating liquids from solids.

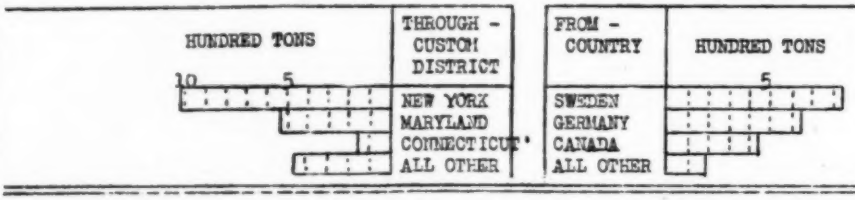
Sowers Manufacturing Co., 1299 Niagara Street, Buffalo, N. Y., had a display of mixers and vacuum pan used in agitating, evaporation, distillation and drying.

Swenson Evaporating Co., 136 Liberty Street, New York, showed photographs of evaporation, some of which are familiar to pulp mill chemists and engineers.

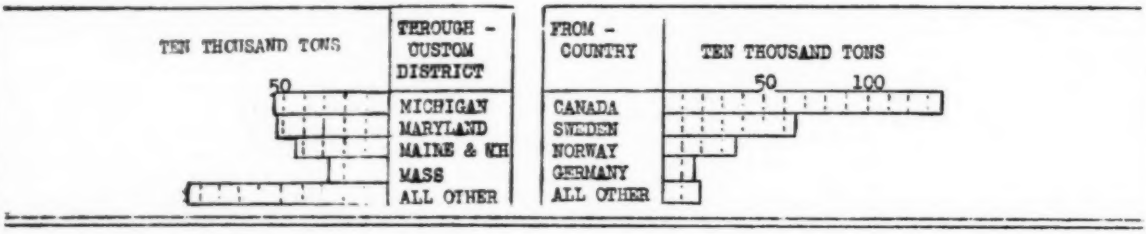
BLEACHED SULPHATE — TOTAL IMPORTS 27,613 LONG TONS



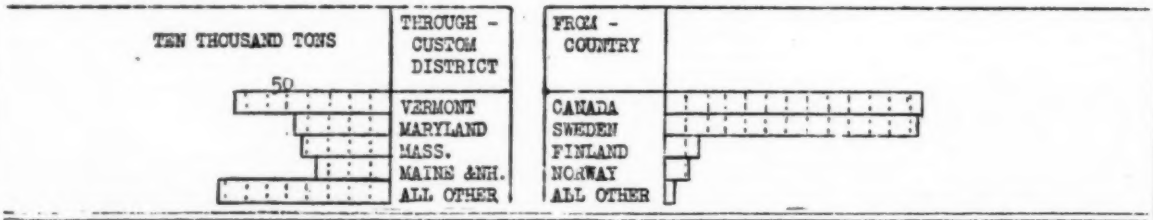
OTHER PULP — TOTAL IMPORTS 2,127 LONG TONS



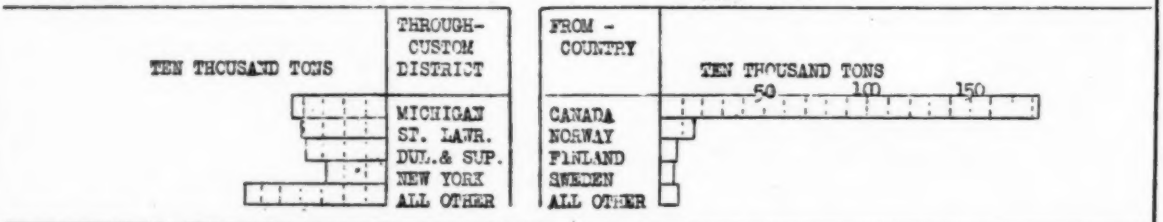
BLEACHED SULPHITE — TOTAL IMPORTS 272,369 LONG TONS



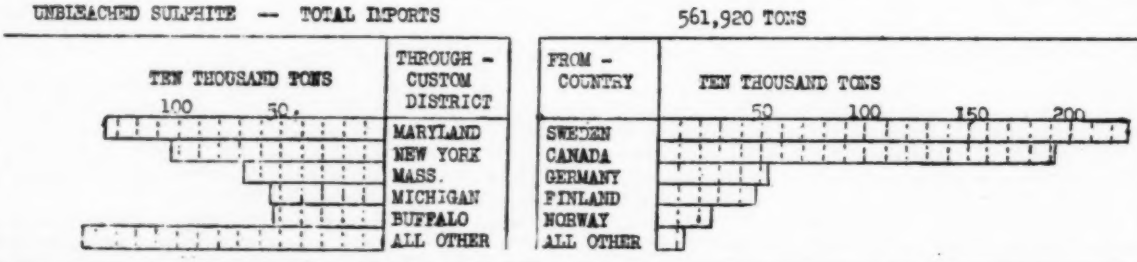
UNBLEACHED SULPHATE — TOTAL IMPORTS 278,094 LONG TONS



MECHANICAL WOOD PULP — TOTAL IMPORTS 219,571 LONG TONS



UNBLEACHED SULPHITE — TOTAL IMPORTS 561,920 TONS



News Briefs from Washington

Newsprint

A definition of newsprint to take the place of the existing definition was agreed upon on Monday, June 29, by the treasury customs experts, who have been holding hearings both of importers and publishers on the subject for the last two or three months. The definition was promptly forwarded for approval, but as it must be considered by several persons, a result may not be reached for a week or more. Meanwhile the suggestions of the experts cannot be made public. Newsprint is the only paper now on the free list.

On the same day, June 29, a circular was issued by the Bureau of Standards, making public a definition prepared by it on December 10 last and forwarded to the Treasury department, but so far not yet acted upon. This definition defines standard newsprint as covered by Par. 1672 of the free list of the tariff act as follows:

Weight—500 sheets, each 24x36 inches, shall weigh not less than 30 pounds nor more than 35 pounds.

Rolls—The paper shall be in rolls not less than 16 inches wide and 28 inches in diameter.

Stock—Not less than 70 per cent of the total fiber shall be groundwood; the remainder shall be unbleached sulphite. Whether the fiber is unbleached shall be determined by Bright's Method.

Finish—The average of 5 tests in machine direction and 5 tests in the cross direction on both sides, moving the paper after each test, made with the Ingersoll Glarimeter, shall be not more than 50 per cent gloss.

Ash—Shall be not more than 2 per cent.

Degree of sizing—Time of transudation of water shall be not more than 10 seconds by the Ground Glass Method or 5 seconds by the electrolytic method.

This definition, says the Bureau of Standards, was based on samples from eleven domestic and Canadian mills. The average test values of these samples were: Weight, 32 pounds; finish, 38.4 per cent gloss; degree of sizing: Ground Glass, 2.8 seconds; Valley Size Tester, 1.5 seconds; ash, 0.37 per cent.

In view of criticism that the test data were obtained for American made paper only and might not be representative of that in actual use, fifty newspapers of recent date and as representative as possible of domestic publications, considering both geographical location and distribution of population, were obtained from a local newsstand. Twenty-six states and forty-six cities were represented. Of these papers only four failed to meet the requirements of the recommended definition. The average values for these papers confirmed those previously obtained, being: weight, 32.7 pounds; finish, 36.5 per cent gloss; degree of sizing by Ground Glass method, less than 5 seconds; ash, 0.69 per cent.

China's Paper Imports in 1924

Notwithstanding the disturbed conditions in the latter months of the year, imports of foreign papers into China during 1924 were considerably above those of the preceding year.

Receipts of the various classes of printing papers at Shanghai in 1924 were considerably above those of the preceding year, with the exception of art printing papers, which decreased in value very heavily. The market for newsprint was keenly competitive, Japan ranking first as a source of supply with 24 per cent of the 1924 receipts, Italy and Sweden with 20 per cent each, and Norway and Germany with 15 per cent.

Nearly one-third of the writing-paper imports by quantity came from Germany, its nearest competitors being Great Britain, with 990,000 pounds, and Italy, with 966,000 pounds. The United States, which ranked fourth from the standpoint of quantity, stood first in the value of its shipments, which exceeded those of Great Britain and Germany by 12 and 20 per cent, respectively.

Only Germany and Italy, among the important competing countries, increased their sales to China during 1924.

The value of the imports of writing paper from the United States fell off 6 per cent during 1924 and those from Great Britain 11 per cent. The most severe losses were from the Scandinavian countries and Japan, whose sales were reduced approximately 70 per cent. Over 60 per cent of the imports of coated paper last year were from the United States, which more than trebled the value of its sales, the nearest competitor being Japan, which supplies 14 per cent of the total receipts. The remainder came from Great Britain, Germany, and Italy, whose sales decreased 20 to 50 per cent compared with 1923.

Imports of board into Shanghai decreased by 25 per cent in 1924, the greatest losses being sustained by America and Japan, which, nevertheless, remained the chief sources of supply, the United States furnishing 84 per cent of the cardboard and Japan 84 per cent of the strawboard during 1924. The total value of the imports of board from the United States into Shanghai last year was $299,155, while from Japan it was $118,148.

Paper Market of Alsace-Lorraine

Paper is largely consumed by the important textile, food products, clothing, glass, ceramic, and printing industries of Alsace-Lorraine, says John Matthews, chief of the paper division of the U. S. Dept. of Commerce.

Wrapping paper is in greatest demand, chiefly by the textile mills. Little or none is used by the retail stores. The textile mills are important consumers of cardboard, which is used as centers for bolts of cloth, for skeins, spools, and cartons. The foods products industry uses wrapping paper, including cellophane and vegetable parchment, label paper, and board. The printing industry, centered at Strassburg and Mulhouse, is the second largest consumer of paper. There are three or four printing establishments with several hundred employees each in addition to a number of small plants. One newspaper has a daily circulation of 100,000, and there are 8 or 10 others with an average daily circulation of 15,000 each. The pages of the newspapers are smaller than those in the average American newspaper, and the number of pages less, averaging only 8 to 12 pages to an issue.

The paper industry of Alsace-Lorraine provides largely for the needs of the district, the local mills producing wrapping paper, fine white and colored papers for writing, printing, and chromolithographic work, linen paper, high-grade tissues, grease-proof and vegetable parchment papers, photographic paper, cardboard, and a number of paper and board specialties, such as spools, buttons, household articles of papier-mâché, lacquered fiber, and electric insulation material. Sweden and Germany are the principal sources of supply of imported papers, the former furnishing kraft wrapping paper and the latter newsprint. An imitation kraft paper manufactured by a firm in the Department of Nord is a close competitor of the Swedish kraft. The only American product observed on sale at Strassburg was a brand of individual drinking cup carried in stock by a dental supply house.

Graphic Showing of the Foreign Paper Trade of the United States in 1924

The six charts on the opposite page have been prepared by the Department of Commerce to show graphically the imports of wood pulp to the United States during 1924, the countries from which they came, and the customs districts through which they were entered. The relative positions in the charts of the customs districts and the exporting countries is not meant to indicate that those on the same line are directly related.

In the lower four charts the scale is given in sections of ten thousand tons, in the top chart in thousand tons, and in the second chart in hundred tons. These different scales were necessary because of the wide range between the several groups of figures and in order to show these figures most clearly.

New England News

July 1, 1925

Maine Superintendents Meet at South Brewer

Mill superintendents to the number of twenty-seven from Maine, Massachusetts, New Hampshire and Vermont gathered at the Eastern Manufacturing Company's mill in South Brewer, Me., on Saturday, June 27, for the thirteenth semi-annual meeting of the Northeastern Division of the American Pulp and Paper Mill Superintendents Association. Among those noticed in attendance by the representative of THE PAPER INDUSTRY were Hebron H. Hackett, Eastern Manufacturing Co., South Brewer; Louis LaDuke, Groveton Paper Co., Groveton, N. H.; Arthur B. Larcher, Penobscot Chemical Fiber Co., Great Works, Me.; Benjamin T. Larrabee, S. D. Warren Co., Cumberland Mills, Me.; W. D. Sommerville, Eastern Manufacturing Co., South Brewer, Me.; L. S. Hatch, Penobscot Chemical Fiber Co., Great Works, Me.; Clifford Patch, Orono Pulp and Paper Co., Orono, Me.; E. E. Howard, Orono Pulp and Paper Co., Orono, Me.; W. A. Cape, S. D. Warren Co., Cumberland Mills, Me.; Peter J. Massbyll, S. D. Warren Co., Cumberland Mills, Me., C. A. Brautlecht, University of Maine, Orono, Me.; George W. Verow, Eastern Manufacturing Co., Lincoln, Me.; S. W. Shannon, Ambrose Macdonald, E. H. Harden, Irving Scott, Harry King, Charles E. Walker, Andrew Burnett, J. O. Lynch, P. S. Ordway, and Stuart B. Copeland, Eastern Manufacturing Co., South Brewer, Me.; Paul Bray, University of Maine, Orono, Me.; George Loomis, Eastern Manufacturing Co., Lincoln, Me.; H. Holden, Vera Chemical Co., Stoneham, Mass.; D. M. Shapleigh, University of Maine, Orono, Me.

Preceding the business meeting, the members and visitors partook of a tasty and well served luncheon in the spacious cafeteria of the mill which overlooks the Penobscot river. Some of the members were accompanied by their womenfolk who sat down with them to luncheon, but were excused from attending a conference in the smoking room which came later and at which papers were presented by Paul Bray and D. M. Shapleigh.

College Courses in Papermaking

Procedure in pulp and paper courses was the subject of Mr. Bray's talk to the men. He is associate professor of pulp and paper chemistry and technology at the University of Maine and gave an interesting account of the subjects studied and the apparatus used. The course includes lectures on pulp manufacturing processes and paper manufacturing, testing and analysis.

The University of Maine has peculiar advantages for demonstrating processes of pulp and paper manufacture, being situated in close proximity to mills where all varieties of pulp and paper are made; soda and sulphite pulps at the Penobscot Chemical Fiber Co. and the Eastern Manufacturing Co., sulphate pulp at the Orono Pulp and Paper Co., groundwood at the International Paper Co. Bleaching processes are carried on at the Penobscot fiber mill and the Eastern Manufacturing mill, both mills operating extensive electrolytic plants for the manufacture of chlorine and caustic soda and having individual recovery systems embodying the latest improvements.

Visits to Mills

Not the least profitable part of the program were visits to the mills named under the guidance of superintendents of departments. It was a rare treat to be shown processes and machinery in operation at the big papermaking plant of the Eastern Manufacturing Co., whose production of fine papers in all varieties is unsurpassed, while the equipment at the plant of the Penobscot Chemical Fiber Co. excited almost as much admiration as the grades of bleached sulphite and soda pulps for which the mill at Great Works, some twelve miles from Bangor, is famous. The hydro-electric plant is of impressive size, recalling in its magnitude that of the Laurentide Co. at Grand' Mère, Quebec. The same may be said of the electrolytic plant from which the firm gets its supply of caustic soda and chlorine for the manufacture of soda liquor and bleach. The cells cover a great area of floor space and so effectively conducted is the process that leaks are avoided and the odor of chlorine, which is so noticeable in some electrolytic plants, was wholly absent. It was a pleasure to inspect the digester house at this mill where equally effective measures are evidently employed to prevent leakage of gas from the extensive battery of sulphite digesters, completely housed in a tall, well ventilated brick building. The Barker system of making acid sulphite liquor is a feature of this plant, which is admirably ventilated and kept in a spick-and-span condition, even to the flooring.

Norwegian Conditions Described

The subject of Mr. Shapleigh's paper was working conditions in Norway as observed by him at the mills of the Union Co., Skein, Norway, during a recent visit. Mr. Shapleigh is a senior student at the University of Maine. He had evidently made a close study of operations in the groundwood and chemical pulp mills of the Union Co., which is the largest concern of its kind in Norway. Quantity production is not the main object sought at these mills, where the woodgrinders are of an old type, taking sticks only 18 inches long and the same in diameter, so that they are termed cubes, being nearly square in shape.

Why Pulp Is Cheap in Norway

Mr. Shapleigh corrected some mistaken impressions that prevail here concerning working conditions. The reason pulp can be produced more cheaply in Norway than in the United States is not so much because of cheap labor, but cheap power, especially an abundance of waterpower used for driving machinery. The operatives in mills are nearly as well paid as American workers, when the cost of living in both countries is given proper consideration. In addition to the factor of cheaper power, there is the one of cheaper wood. The cost of wood delivered at the mill does not exceed $9 a cord. No, he said, last and least important is the factor of labor which to the Norwegian manufacturer is no cheaper than it is in the United States.

In paper production, the Norwegians do not go in for speed, most machines running at 600 f.p.m., one or two machines that were speeded up to 700 f.p.m. being pointed out as very fast specimens.

The machines are practically driven direct from a water turbine. He saw several machines that had been in operation for thirty-five years.

Wood Not Piled

Norwegian mills do not practice wood piling. The logs are taken as required from the water. Another mistaken notion with us is that the winters are excessively cold in Norway, but, as Mr. Shapleigh pointed out, the rivers never freeze over. The chemical pulp mills use wood that has been dried by piling in criss-cross fashion to secure ventilation and it is claimed that a better yield of pulp is obtained from wood prepared in this way.

American Machinery Preferred

All modern mills now being built in Norway are equipped with American machinery. He mentioned the use of a "flat rotary screen," a contrivance pierced with holes which has a circulation motion under water. It is equipped with brushes for scraping off shives and splinters.

Mr. Shapleigh mentioned that the shipping of paper was quite a proposition with paper manufacturers in Norway. Being exported in cargo boats, all roll paper had to be crated by a special process.

Ball Game and Mill Visits

At the close of the business session the members had the choice of attending a baseball game in a park adjacent to the mill or inspecting the pulp and paper mills referred to in the early part of this article. A goodly number went through the Eastern Manufacturing Co.'s plant and followed this with visits to the Orono Pulp and Paper Co.'s mill at Orono, and the plant of the Penobscot Chemical Fiber Co. at Great Works.

Penobscot Trounces Easterners

The baseball game between teams from the Eastern Manufacturing Co. and the Penobscot Chemical Fiber Co. resulted in a crushing defeat for the home team. Gil. Whitehouse pitched for the Easterners, but he was not in good form and

Danny Martin of P.C.F. put the ball over the fence twice in succession with men ahead of him. Manfredi pitched for P.C.F. and was very effective, defeating the Easterners by a score of 13 to 0. In a previous game the Easterners won by a score of 3 to 1.

Morale in Industry

The meeting closed with a dinner at the Bangor House at 7 p. m., which was attended by thirty members and guests of the Northern Division. Chairman W. D. Sommerville presided and with him at the head table was the only lady present, Mrs. Benjamin T. Larrabee, of Westbrook, Me. The principal speaker of the evening was President C. C. Little of the University of Maine, who made an appealing address on problems confronting superintendents in the handling of men and certain aspects of industrial and educational development. If in dealing with the workers, those who are in places of responsibility will see that the children of these workers have a good education and receive proper medical attention they will hold the workers, otherwise there will be discontent. He urged greater attention to cultivating morale, for any lack of morale, either in industry or education, leads to deterioration of product.

The question of the handling of groups of men for a fixed end was a problem, the factor being to find out what grade of product it was desired to make, and get the personnel to do it. Unless managers of industries looked out for the morale of the persons in their employ they would invite trouble. This trouble might come when a consumer of the produce manufactured visited the plant and found the workers poorly housed and other indications of inability to handle problems.

After thanking President Little for the enlightening address to which they had listened, Chairman Somerville announced that the next meeting of the division would be held in October at Lancaster, N. H. This closed the proceedings.

Outing of Boston Paper Trade Association

Despite the rather low operating ratio of New England mills and the unquestionably poor demand for paper, there was a huge turnout of members and guests for the annual outing of the Boston Paper Trade Association, at the Vesper Country Club, at Lowell, Mass., on June 9. The usual round of sporting events including golf, tennis, quoits, bowling on the green, were staged with an unusually large quota of contestants in each. The golf tournament drew a large number and for the first time in several years, Hubert Carter was able to secure some real tennis competition when a half dozen double teams participated.

W. J. McClellan, as chairman of the Sports committee, supervised each event and also umpired the ball game. The bowling on the green was won by R. P. Teele, the cigarette smoking by Charles Walden, the quoits by W. N. Bigley and Herbert J. Casey, and the ball game between merchants and manufacturers ended in a tie. T. C. Walsh, sales manager of Hollingsworth & Vose Co., pitcher for the manufacturers, was exceedingly good, striking out five merchants in four and a half brief innings.

The dinner bell ended the game abruptly. Between courses, President W. B. Stevenson awarded prizes for winners in all events. J. L. Munro won first net and the custody of the superb Boston P. T. A. Championship cup for a year; for permanent possession it must be won three times. Floyd Blackman was second, Norman Harrower had first gross and Ed Bement second.

Elliot Carter and C. P. Wilkins won the doubles competition in the tennis. With almost 100 out of the 112 present taking part in the sports, the Boston P. T. A. outing has become more than ever a good time for everybody.

The great paper mill supply area of New England centers largely at Chelsea, Mass. Inadequate fire protection, however, has caused several of the largest fire insurance companies to refuse all risks in what is known as the rag shop district. Percy Bugbee, field secretary of the National Fire Protection Association in a communication to Samuel H. Robie, of Chelsea, made public facts regarding the situation. He declared that a general conflagration would be wholly possible if the wind were right; and that no fire department could hope to cope with it. Lack of sprinklers as ordered by Massachusetts laws, piles of exposed inflammable material and no fire stops are given as the reasons for withdrawing insurance from the territory.

Another Big Improvement at S. D. Warren Co.

The S. D. Warren Co. has under way another big improvement to their great Cumberland Mills, Me., plant. They are engaged in rebuilding and enlarging the water supply system which cares for the water requirements of both the paper and pulp mills. It consists essentially in an enlarged screening and filtering plant, double the capacity of the one that now serves, the installation of a new pumping station and equipment, the installation of a new 42 inch line 600 feet long to supply the unfiltered water to the plant, and several thousand feet of 20, 16 and 12 inch mains for carrying the filtered water to the various departments.

Incidentally, the company in announcing this great development indicated that they would very shortly commence the construction of a new finishing mill, as the site on which it will be located is the old reservoir which under the present water supply development will be abandoned.

The new water plant will have a capacity of twenty million gallons of water daily, more than is used in the entire water district of the city of Portland close by. The very latest and best methods of filtering will be installed in order to maintain at their present high state the quality of Warren's Standard Printing Papers.

Designed by Employees

Instead of seeking the services of outside firms, the capable engineering staff of the S. D. Warren Co. were able to design the plant themselves, and what is more, the construction will be done practically in its entirety by the company's own employees. The plant in detail consists of a battery of six revolving screens through which all the raw water passes before going to the sand filters. These screens covered with fine wire cloth, 70 meshes to the square inch, remove all the bark pulp fibers, etc., that the river water contains. The sand filters are filled with fine sand two feet in depth and deliver a water colorless and free from suspended matter. The enlarged plant will have an area of 5,000 square feet for filtering, which insures not more than 2 and 1.2 gallons of water per square foot of sand, thereby guaranteeing the thoroughness of the filtering process.

The pumping plant for this water consists of two units of 13,000 gallons per minute rated capacity each. One unit consists of a 400 H. P., 2,200 volt motor driving an 18 inch centrifugal pump. The other unit is a similar pump driven on one end by a 400 H. P. steam turbine. This latter unit is unique in that power is provided from both steam and electrical sources and insurance against possible shut down of the pump through failure of either power is secured. The company all through its more recent installations has taken similar precautions of having both steam and electricity available for each essential piece of machinery. In this case, either power unit will provide sufficient power for the delivery of the rated capacity of the pump. Proper governing apparatus is provided for this interchange of power automatically. The pumps will deliver water to the mill at 50 pounds' pressure and in such quantities as is demanded by further refined control equipment.

Safety Campaign at Hollingsworth & Vose

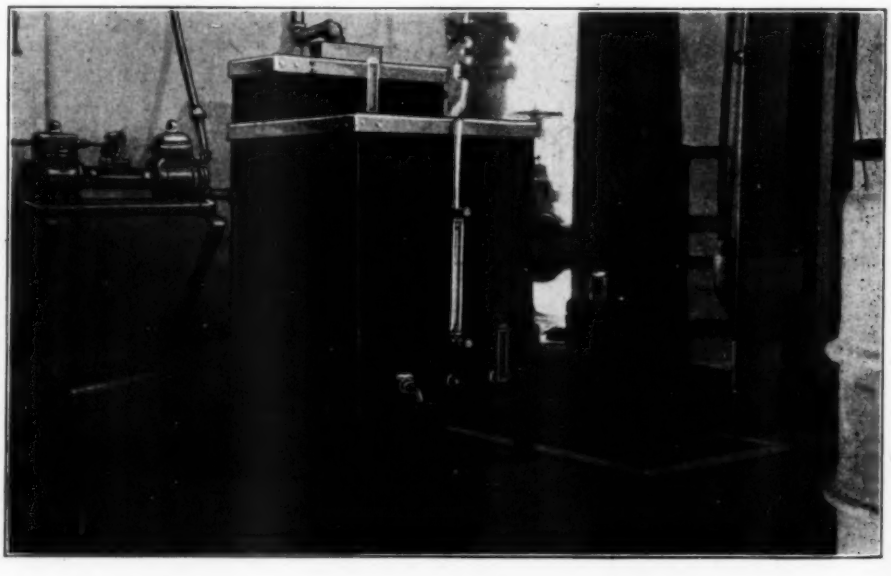
One of the most edifying experiments in Safety Work is being conducted by Hollingsworth & Vose Co., conclusively demonstrating the value of persistent safety campaigning. Nat Bartlett, traffic manager, was put in charge of the company's safety work early this year. An aggressive, energetic young man, he immediately launched a safety campaign under most approved methods at both the Walpole and Groton mills. Large halls in both towns were hired, moving pictures shown and speeches made, safety slogans posted. Each mill organized with a safety committee, and with the following results—a 60 per cent reduction in accidents and an even greater drop,

Before

THIS picture shows the old wasteful method of handling lubricating oils in a paper mill. It is dangerous as well as wasteful—dangerous because of the risk to human lives, as well as because of the fire hazard.

After

THIS photograph shows the neat, safe and economical way in which oils can be stored and kept clean with a Bowser storage and filtering system. The circulating pump mounted on a wall bracket moves the oil to and from the mill machinery and keeps it clean during the process. Bowser engineers are able to advise you how to equip your own plant to secure utmost economy in oil consumption, as well as to insure the longest possible life for your machinery through adequate lubrication.



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which is not divulged, in number of hours lost through accidents. The fewer accidents were less serious. The work will continue, with an entertainment each month alternating between the two mills. Films shown on these occasions include industrials, those intended to preach safety, ending with a Pathé, Harold Lloyd or some other comedy.

Incidentally the annual outing of the company will be held about July 25 at a place to be determined.

Annual Strathmore Town Day

Strathmore Town Day was the usual great event in a year of big times in New England. The distributors of Strathmore Paper Co. gathered at the Hotel Kimball in Springfield on Sunday, June 14, and on the two following days enjoyed the hospitality of the Strathmore Paper Co., and listened to some inspiring addresses. The start was made Monday, June 14, for Woronoco, where the Strathmore mill was inspected. The mill and merchants' association met before noon at which routine business was disposed of, and the following officers elected for the ensuing year: G. S. Clerk, of the Hudson Valley Paper Co., president; H. M. Zimmerman, of the Johnston Albershart Co., Cincinnati, vice-president; C. W. Dearden, of Strathmore, continues as secretary. The following were elected to the Advisory Executive Council: Ellis Jones, of the Kansas City Paper House; Morris Schlosser, of M. & F. Schlosser, and N. A. Considine, of the Paper House of Pennsylvania.

Luncheon at the Strathmore Inn followed, and at 2:30 the big opening meeting of the year took place. The keynote address was by Col. B. A. Franklin, vice president of Strathmore, who discussed more profits and more sales of Strathmore papers. The talk was illustrated by graphs and charts that effectively brought home the message the Colonel was delivering. After this meeting the gathering was carried up the mountain in a caravan of cars to the farm of Mr. H. A. Moses, president of the company.

Here was enjoyed that perennial event, the steakroast, at which everyone donned white aprons and roasted his steak over a trenchful of glowing timber, with plenty of "fixins" to make it thoroughly enjoyable.

Some of the members preceded the roast by quoits, target shooting with 22 caliber rifles, and ball tossing.

The Tuesday meeting at the Strathmore Inn, presided over by G. S. Clerk, discussed the value of advertising to merchants. Addresses were made by Henry Zimmerman of Cincinnati, Robert Tinsman of the Federal Advertising Agency, Cy Norton-Strathmore advertising manager, Dan Jacobs of the Seaman Patrick Paper Co., Charles Bond of the Arnold Roberts Co.—certainly a group of able speakers.

The annual clambake followed the meeting, then the Strathmore Town "Election," which is the annual comedy event, and the appearance of "Strathmore Town Blatter," containing humorous references to many present and a detailed account of the events of the meeting.

Annual outing of the combined employees of the Crocker-McElwain Co. and the Chemical Paper Mfg. Co., at Holyoke, drew a throng of 2,300 from both mills who motored, trolleyed and walked to Hampton Ponds near Holyoke for their annual outing. The Women's Exchange of Springfield served a box luncheon. The sporting events occupied the entire day, although an orchestra and dancing also attracted many during the afternoon. The fast ball team of Crocker-McElwain captured the game from Chemical Paper Mfg. team by the big margin of 15 to 2. Chemical retaliated in the tug of war in which they pulled the Crocker team off of its feet. Races for girls, boys and men were held and worthwhile prizes awarded.

The New England Card & Paper Co., of Springfield, Mass., which was recently incorporated under Massachusetts laws with a capitalization of $150,000, will, it is understood, manufacture cards of various kinds in Springfield. The incorporators include Mary C. Swan, D. L. Swan and H. B. Swan, all of Springfield.

State of Massachusetts announces that it has transplanted 1,800,000 young trees, a large part of which were spruce, and has shipped three million seedlings to private nurseries and to the other nine state nurseries from the main station at Amherst, Mass.

Responding to frequent requests for sets of samples illustrating Keith Quality papers, the Keith Papers Co., of Turners Falls, Mass., has prepared and distributed throughout the country to all its merchants for redistribution to the trade, a unique set in compact form, properly presenting the Keith lines. The portfolio is modestly called Keith Quality Exemplified. Accompanying the portfolio is an announcement and a convenient folder showing a complete list of all grades, colors, finishes, sizes and weights obtainable, comprehensively compiled for ready reference. It includes all their well known bonds, ledgers, halftone writings, covers and parchments.

I. C. C. to Hear Arguments

In order to study the New England angle of the class rate revision, the Interstate Commerce Commission will hear the arguments of New England shippers starting September 14 in the Federal Building at Boston. The New England Paper and Pulp Traffic Association, as well as the newsprint, fine writing and other divisions of the paper industry will be heard at that time.

Considerable newsprint is shipped from the United States to Cuba particularly by International Paper Co. mills in New England, through the port of Boston and via the United Fruit Co. boats. The United Fruit Co. has recently filed a new tariff covering certain lines of paper which shippers had intimated might be moved in some volume to Havana or Santiago, Cuba. The rates are on box board, cardboard, newsboard, pulpboard, strawboard, drinking cups (paper) and fiberboard. The rates are quoted at 10c per cubic foot for various grades of board and 20c per foot on drinking cups. The rate on fiberboard is 35c per hundred pounds. To Havana these rates apply with the addition of a 12c per hundred pounds wharfage and lighterage charge.

Hollingsworth & Vose Co. closed their East Walpole plant for a fortnight during June following a severe fire in one of their stock sheds, which, with water damage, destroyed considerable scrap bagging. Fortunately, the loss came at a time when the company was about to close for necessary repairs and adjustments to its machinery at the East Walpole mill.

Expect Big Savings Through Powdered Coal Installation

Details on the Fitchburg powdered coal installation have been made public by George P. Carver, Inc., of 261 Franklin St., Boston, the engineers. Three pulverizers are to be installed in the place of the three automatic stokers which now feed the boilers of the Fitchburg Paper Co. These three 150 H. P., H. R. T. boilers are to be operated at a 200 per cent rating with powdered coal, an increase of 25 per cent over the rating which it is possible to obtain with the present automatic stoker equipment. Work has already started on the installation which should be completed before the end of July.

A very important guarantee is made by the engineers, which provides that the savings in fuel costs inside of two years' operation will make the present investment pay for itself within that period. A recent similar powdered coal installation was designed by this firm of engineers for the Uxbridge Worsted Co., of Uxbridge, Mass., and a saving of 40 per cent in the fuel and 50 per cent in the labor has since been effected.

George A. Richter, head of the Research Department of Brown & Co., Berlin, N. H., gave a very interesting talk before the Berlin Rotary Club recently. He stressed the need of research in all industry continuously.

John J. Kennedy, for 20 years a superintendent of the Crocker-McElwain Co. mill, at Holyoke, died recently after 40 years' service in the paper industry. For 18 years prior to his joining the Crocker-McElwain organization, he was with the Riverside Paper Co. For a few years he was con-

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nected with a Maine mill. He is survived by his wife, four sons, two sisters and two brothers.

The Hazen Paper Co., of Holyoke, who give in their incorporation papers the intention of "manufacturing and selling paper," have been chartered under Massachusetts laws with $50,000 capital stock. Those mentioned in the charter papers include John N., Edward E. and Marie Hazen.

Mr. and Mrs. William F. Whiting, their daughter, Ruth, and their son, Fairfield, sailed recently for an extensive European trip this summer. They will return late in September. It is reported that several prominent Holyoke manufacturers besides Mr. Whiting have taken their families abroad for the summer.

Donald Cameron has resigned as foreman of the calendar and cutter departments of the Linden Division, American Writing Paper Co. He leaves to take a responsible position with the Dexter Paper Co., at Windsor Locks, Conn. Prior to his coming to the Linden Division, he was chief finisher at the George C. Gill division of the American Writing for 25 years.

A terrific explosion in the boiler room of the Rollstone Paper Co., Fitchburg, Mass., last month, blew a large flywheel through several floors of the building and damaged the plant to such an extent that it was necessary to shut down pending repairs. The Rollstone Co. is a subsidiary of the George W. Wheelwright Paper Co., and produces glassine and other grease proof lines.

Lightning struck the mill of The Orono Pulp and Paper Co. recently, slightly damaging the chimney and causing a stubborn fire in the acid plant that was only extinguished after considerable difficulty. The power plant was temporarily put out of commission. A neighboring plant of the International Paper Co. was also struck during the same thunder storm and slightly damaged.

A French Canadian machinist, of Nashua, N. H., together with Messrs. A. Y. and Harold Pearl, chemists of Dover, N. H., have leased an old textile mill in Windsor, Vt. from the present owner, F. A. Kennedy, and will install machinery for the operation of a paper mill which will produce a new fancy wrapping paper, not manufactured elsewhere in the United States, and according to the Dover chemists, made only in France and in an inferior quality. The Pearls, father and son, have been experimenting on this sheet for months and have reached a stage when they believe manufacturing can be started. The organizer is Henri Seveigne, of Nashua, and the company will carry the name of Seveigne, Pearl et Cie.

The Eastern Manufacturing Company, 292 Madison Avenue, New York City, announce that Mr. Frank O. Sullivan, formerly director of the photo-lith division of the F. Wesel Manufacturing Co., Inc., Brooklyn, N. Y., is now associated with them as director of their offset paper division. Mr. Sullivan will devote his wide knowledge of offset printing to the development of this division, which will handle an offset book paper and an offset bond.

Roeper Crane & Hoist Works, Inc., Reading, Pa., manufacturers of electric and hand power traveling cranes, electric hoist and trolleys, announce the following sales that they have recently made: Ontonagon Fibre Co., Ontonagon, Mich., one 10-ton double I-beam hand power traveling crane, 35 feet span; Scott Paper Co., Chester, Pa., one 8-ton crane, 44 feet 4 inches span; one 8-ton crane, 42 feet 3 inches span; one 2-ton crane, 44 feet 4 inches span. Philadelphia Paper Manufacturing Co., Philadelphia, Pa., one 5-ton crane, 51 feet span. North Star Strawboard Co., Quincy, Ill., one 3-ton three-motor electric crane, 43 feet 4 inches span.

The Republic Flow Meters Co., of Chicago, announce the opening of a factory branch office in 535 Bramson Building, Buffalo, N. Y. This office will be in charge of Mr. W. W. Barron, formerly of their Chicago office.

Foreign Correspondence

British Paper Trade Situation

There is very little improvement to be reported in the outlook for the British papermaking trade. This is always regarded as a quiet part of the year for the paper industry in this country.

In the wrapping section, the warmer weather has produced increased activity, but in this particular section the increased demand is for a type of paper which is mainly imported. The hot weather always causes an enormous demand for vegetable parchment, as fruit, fish, butter, biscuits, tobacco, moist and dry foodstuffs, and many other perishable products require a wrapping of this description. Another commodity which has caused a rise in the demand for this class of wrapping is the popular ice cream brick, which continues to be high in public favor, especially during holiday seasons and during the especially hot period which we have experienced in this country for the last four weeks.

The mills in Great Britain are not able to compete with the Belgian, German, and French mills, and nothing short of a tariff on imported goods would enable an English mill to undertake successfully the manufacture of vegetable parchment. Even greaseproofs and imitation greaseproofs which require a less specialized treatment, cannot be made in this country to any appreciable extent.

In addition to vegetable parchment and greaseproof papers, imports of all other classes of wrapping and packing papers are steadily increasing. According to the Board of Trade returns for January-April last, 1,469,709 hundredweight of these papers were imported during that period, as against 1,167,968 hundredweight in the corresponding months last year. On the other hand, our exports which were 171,917 hundredweight for January-April, 1923, advanced to 212,577 hundredweight in 1924, while they have this year fallen to 76,070 hundredweight.

English mills are making little or no profit on their effort to maintain some sort of a hold on the home demands for wrappings. Some mills, depending mainly on this class of production are actually accumulating losses in an effort to keep their staffs together. Much has been said of the necessity for maintaining wrapping paper plants at the highest pitch of efficiency if they are to compete against the foreign paper maker, but little reference has been made to the conditions of labor which obtain in some of the mills of our Continental competitors. A writer in The Times Trade Supplement, dealing with this matter, says, "Efficiency and the ability to specialize are fundamental necessities in every section of the paper making industry, but they do not enable successful competition against the advantages of the long hours and lower wages abroad. The conditions at home are such that investment in new plant merely adds further weight to an already intolerable burden of taxation."

Newsprint manufacturers are still quite busy, but while securing an inadequate return for their product, they are also faced with the possibility of an Australian tariff concession to Canada. Canadian newsprint mills are anxious to secure an entry into the Australian market. It is doubtful now if any definite settlement will be arrived at during the current term of the Australian parliament, and the delay insures for our own newsprint mills a welcome extension of the period during which their output coincides with their capacity.

Our imports of writings have practically balanced our exports, the total for January-April being 1,060,821 cwt. The only classes of paper in which our exports exceed imports are fine writings and newsprint, the former because of our preeminence in manufacture, helped by water-marking, branding, and the employment of domestic raw material—the latter being solely due to the preferential Australian treatment.

The only thing which is likely to help our paper making industry to develop its exports is inter-trading within the Empire with reciprocal preferential treatment.

The home market for the sale of paper of all sorts is in poor condition. Each month for some time past has proved to be worse than its predecessor. The paper trade reflects the condition of the staple industries, but the fine paper section is a true index to the state of commerce generally, and at present the home demand is not nearly sufficient to keep the machine

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Chattanooga, Tenn.....702 James Bldg.
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in full employment. The standard of prices is maintained on a consistent level, and the profit margins are reasonably good. There is keen competition between the various mills for available business, and the quality is kept at a high pitch.

The hand-made paper mills are suffering from a period of depression, and in certain branches short time is being worked. Several vats have been idle for a prolonged period, and the poverty of the demand, particularly for ledger papers, is giving rise to serious concern. Many publishers are using imported handmade printing papers for their *de luxe* and subscription editions, despite the fact that there are English handmade mills capable of giving the publishers all they desire of this particular paper, both as regards quality and price.

A slight stir has been caused in the manufacturing stationery trade by the intimation of the Post Office authorities of a prospective increase in the regulation size of post cards. The picture post card authorities have definitely decided to boycott the new size, and no special desire for an alteration in size has been shown in any direction, and to those firms who have a stock of costly originals and printing surfaces, and a stock of actual cards, this constitutes a serious matter. It is understood that the cost of production can in no circumstances be recovered by increasing the selling rate of post cards.

Printing Exhibition and Paper Standardization

The Federation of Master Printers had an interesting exhibit at this trade show held at the end of last month. Among the brochures which they had for distribution was one devoted to the subject of paper standardization. In it is explained the fact that the council of the federation considers that paper standardization will eliminate errors in calculation, simplify the keeping of stocks and records, reduce the varieties of stock kept by paper dealers and others, and, therefore, reduce the cost of paper in various ways. It further points out that in order to carry through the standardization of stock papers, the council considers it desirable that master printers who desire this improvement should express their willingness to give preference to those paper agents and dealers who adopt the approved standard methods.

A Notable Belt

A notable belt has recently been installed in a West Virginia lumber mill by J. E. Rhoads & Sons. This is a 48 in. 3 ply, 117 ft. in length. It is not so remarkable for its size as for its strength. It is made of the Rhoads Watershed Tanmate leather. It shows a breaking strength of more than 5,000 lbs. per square inch of cross section. To break this belt would probably require a pull of 100,000 lbs.—about the weight of a carload of coal. Such strength allows a large factor of safety above the maximum pull to which this belt will ever be suubjected in service.

To make this belt required the centers of 175 steer hides of the best quality. After tanning by the Rhoads special Tannate process, these hides were put through some 19 operations to finish the leather and prepare the belt for carrying the power load of a great mill. In all the belt contains 304 pieces of leather, each about 4 ft. long and of a width to match up so as to be properly staggered to prevent one joint coming on top of another.

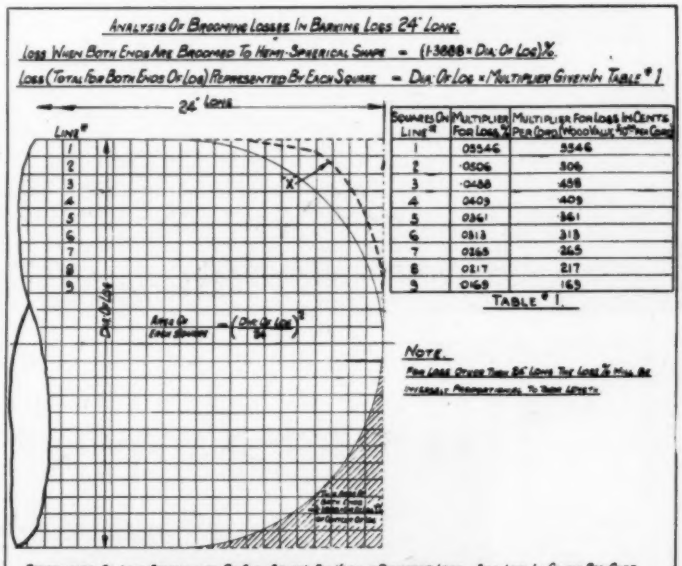
The pieces of leather are jointed with both longitudinal and crosswise laps, all carefully joined with a cement that is absolutely impervious to water and is not affected by oil. The hydraulic pressure used in cementing the plies together is enormous, three being more than 250,000 lbs. applied to each pressing 3 ft. long.

Such care in construction makes it safe to run the belt at great speed—well over a mile a minute if necessary, though the greatest efficiency for power transmission is reached at between 4,500 and 5,000 ft. per minute. At a speed of 5,000 ft. per minute this belt is capable of transmitting over 1,000 H. P. and for overloads for short periods, considerably more. Under such an overload the tension on the tight strand of belt would be close to 10,000 lbs.

The capacity of such a belt transmitting power with very slight losses day after day and year after year is one of the interesting things in mechanical engineering. Under proper conditions of installation, the losses are due to the very minute effect of heating, due to the bending of the belt around the pulleys and also to the slight elongation of the fibers when in the tight strand of the belt and the elastic contraction of these same fibers when in the slack strand. It is said, however, that these losses of power should not exceed 1½ to 2 per cent.

Mr. Edgar A. Jamieson, of the Jamieson Engineering Co., Ltd., of Vancouver, B. C., has been appointed western manager for the Combustion Engineering Corporation, Limited, with offices at Vancouver, B. C.

The Combustion Engineering Corporation are known throughout the world as the pioneers in advanced steam plant equipment.


Analysis Of Brooming Losses In Barking Logs 24' Long.
Loss When Both Ends Are Brommed To Hemi-Spherical Shape = (1·3888 × Dia Of Log)%
Loss (Total For Both Ends Of Log) Represented By Each Square = Dia Of Log × Multiplier Given In Table "1
24' Long
Line
Dia Of Log
Area Of Each Section = (Dia Of Log / 24)²
Squares On Line | Multiplier For Loss % | Multiplier For Loss In Cents Per Cord (Wood Value $10 Per Cord)
1 | 05546 | 5546
2 | 0506 | 506
3 | 0458 | 458
4 | 0409 | 409
5 | 0361 | 361
6 | 0313 | 313
7 | 0265 | 265
8 | 0217 | 217
9 | 0169 | 169
Table "1.
Note.
For Logs Other Than 24' Long The Loss % Will Be Inversely Proportional To Their Lengths.

Percentages Of Loss Represented By Each Square For Various Diameter Logs. Also Loss In Cents Per Cord Based On Pulpwood Value Of $10 Per Cord

Squares On Line	4" Dia. Loss %	4" Dia. Loss In Cents	5" Dia. Loss %	5" Dia. Loss In Cents	6" Dia. Loss %	6" Dia. Loss In Cents	7" Dia. Loss %	7" Dia. Loss In Cents	8" Dia. Loss %	8" Dia. Loss In Cents	9" Dia. Loss %	9" Dia. Loss In Cents	10" Dia. Loss %	10" Dia. Loss In Cents	12" Dia. Loss %	12" Dia. Loss In Cents
1	222	2·22	277	2·77	333	3·33	388	3·88	444	4·44	499	4·99	555	5·55	666	6·66
2	202	2·02	253	2·53	304	3·04	354	3·54	405	4·05	455	4·55	506	5·06	607	6·07
3	183	1·83	229	2·29	275	2·75	321	3·21	366	3·66	412	4·12	458	4·58	550	5·50
4	163	1·63	204	2·04	245	2·45	286	2·86	327	3·27	368	3·68	409	4·09	491	4·91
5	144	1·44	181	1·81	217	2·17	253	2·53	289	2·89	325	3·25	361	3·61	433	4·33
6	125	1·25	156	1·56	188	1·88	219	2·19	250	2·50	281	2·81	313	3·13	376	3·76
7	106	1·06	132	1·32	159	1·59	185	1·85	212	2·12	238	2·38	265	2·65	318	3·18
8	087	87	108	1·08	130	1·30	152	1·52	174	1·74	195	1·95	217	2·17	260	2·60
9	067	67	083	83	101	1·01	118	1·18	135	1·35	152	1·52	169	1·69	203	2·03

Table "2.

Example:—

Assuming The Dotted Line 'X' As Showing The Outline Of An 8" Dia Log After Passing Through Brookers.

Using Figures In Table "2 For 8" Dia Logs. The Loss In Material Is Obtained As Follows:—

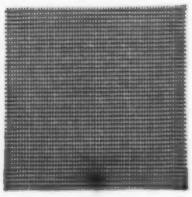
Line	Squares Approx			
1	5	=	5 × 444	= 2220 % Loss = 22·20 Cents Loss.
2	3½	=	3½ × 405	= 1·418
3	2	=	2 × 366	= 732
4	1½	=	1½ × 327	= 490
5	1	=	1 × 289	= 289
6	½	=	½ × 250	= 187
7	½	=	½ × 212	= 071

Total Loss Per Cord = 5·204 % = 52·04 Cents

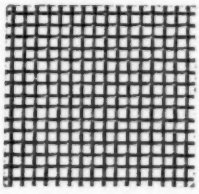
Brooming Losses in Barking Logs

The above chart and tables have been prepared by W. H. Wharton, sales and consulting engineer of the Canadian Allis-Chalmers, Ltd., Toronto. By the use of this chart and tables, it is possible for those in charge of wood rooms to easily ascertain the losses they are incurring during the barking operations.

FOURDRINIER WIRES



In Brass, Bronze and phosphor bronze, widths up to, and including 250 inches.



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Canadian Section

Montreal, July 1, 1925.

Australian Trade Treaty Passes Both Houses at Ottawa

The much talked-of Australian Trade Treaty was rather unexpectedly brought before the House towards the end of the last month, and after considerable debate passed the required three readings in both the House of Commons and the Senate. Before coming into effect, it must now be ratified by the Australian Parliament, and in some quarters doubt is expressed as to whether the Australians will now accept it.

The most important single item involved is news print paper, which under the terms of the Treaty will be admitted free instead of being subject to the present duty of three pounds per ton. The Australian market at present consumes some 100,000 tons of news print yearly, and it is considered that Canadian paper mills should be able to capture at least half of this market.

The Australian tariff concessions of interest to the pulp and paper industry are:

News print and printing paper, in rolls not less than ten inches in width or in sheets not less than 25 x 25—free.

Printing paper, N.E.I.—Fifteen per cent ad valorem.

Writing and typewriting paper—Five per cent ad valorem, with an ad valorem deferred duty of 20 per cent.

QUEBEC

International to Build Chelsea Mill

Preparatory steps for the erection of a large newsprint mill by International Paper near Chelsea, Que., were taken recently when Walter Blue, engineer of the Riordon Company's staff, visited Chelsea to look over the site of the new mill.

R. S. Battee, of the Gatineau Company, Ltd., which was taken into International Paper through the company acquiring the eight and the six per cent bonds of the Riordon Pulp and Paper Company, stated a short time ago that, though actual work on the plans for the new mill or the power dam was not yet complete, the plans were well advanced and were approaching a stage where tenders could be called for and contracts let.

It is expected that paper will be coming off the machines within two years.

Difficulties in connection with the completion of the Grande Décharge dams of a very serious nature are said to have been encountered in recent months. In fact there may be delay in the work for a year. The engineers have found it difficult to divert some of the waters from the lake so as to complete the damming work, but there is no fear entertained that the project will not be successfully carried out.

Large Chemical Works for Lake St. John Region

Cheap electric power and steady, reliable labor, which already have done so much to develop the pulp and paper industry in the Province of Quebec, now promise to bring about extensive developments in the electro-chemical field.

Shortly after the announcement that the Duke interests were going ahead to extend their power developments in the Lake St. John region so as to harness a million horse power, it was officially reported that the Duke interests had acquired controlling interests in a large aluminium manufacturing company and would proceed without delay to erect a plant in the neighborhood of the power development.

In an official statement, Premier Tarschereau declared that the promoters would soon start in on the construction of a model town with a thousand houses to accommodate the men employed in the preliminary work, and that it was the intention ultimately to lodge a population of about 6,000 families within a short period. Twenty boats will be kept in operation on the Saguenay River to meet the requirements of the company.

Aimé Geoffrion, K.C., of Montreal, legal representative of the firm, stated that the raw material would be obtained from British Guiana, and that the developments would require an immediate expenditure of some $40,000,000, and a total expenditure estimated at between $75,000,000 and $90,000,000.

Laurentide Increasing Its Reforestation Activities

An addition of 1,000 acress to its plantation situated near Grand' Mère, Que., will be undertaken this season in the reforestation plans of the Laurentide Co., which is one of the pioneer organizations in the great work of reforestation. The plantation is about three miles from the mill and the trees planted this spring will total about 3,000,000. In addition the company will take 2,000,000 trees from the nursery and place them in its transplant beds.

A considerable sales and export business has been worked up by the forestry division of the company. This year the Shawinigan Water and Power Co. are taking 50,000 trees, and at least 165,000 trees are being exported to the United States, accompanied by 446 pounds of spruce seed. Also, quantities of moss are being sold to Montreal firms.

Laurentide slashers started up during the last days of May in conjunction with the opening of the sorting operations. The wood mill passed a busy winter in preparation for the resumption of a slashing and piling operation this summer. Two conveyors have been nearly entirely constructed anew, certain of the barrels have been repaired and piers for the slasher apron have been renewed. On the barrels a new end has been provided, draining racks have been installed or repaired, the drives have been changed to some extent, and other repairs made.

Official confirmation was received recently at the Attorney General's Department, Quebec, that at the Supreme Court, seven judges, with Justice Duff dissenting, had reversed the judgment of the Court of Appeals in the Superior Court regarding the rights of Price Bros. & Co., Ltd., Quebec, on certain territory known as the Lake Métis Seigniory, in the eastern section of the province. Two years ago, Price Bros. claimed that they had rights on the territory surrounding three lakes known as the Métis Lakes, while the Quebec Government limited these rights to only one of the lakes and on an area of one league around it. Justice Gibson upheld the contention of Price Bros., as did the Court of Appeals. This is now denied by the Supreme Court, and it is understood that the case will go to the Privy Council. The territory on which the company could have exploited is very considerable, and though no figure as to the value of the lands has been given out, it is alleged that over $1,000,000 is involved in the case.

Peribonka Timber Limits to Be Auctioned Soon

Involving a deal which is to bring the Province of Quebec at least $1,000,000, in addition to a large revenue from timber dues each year, official advice was issued recently that the leasing of 1,900 square miles of timber limits along the Peribonka and Nicauda rivers in the Chicoutimi district would take place on the 26th of July.

A feature of the sale is that within a period of five years from the signature of the contract, the lessee must manufacture within the limits of the province, with the logs cut on those limits, pulp and paper at the rate of ten tons per 100

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miles of forest, which means a production of 150 tons daily.

It is known that at least two of the prospective bidders possess some mills in the district, and it is generally understood that Price Brothers are interested. Three days before the auction, a deposit of $100,000 for the 1,500 miles along the Peribonka and $30,000 for the limits along the Nicauda must be made. The lessee will not be authorized to cut more than 80 per cent per annum of the annual increment in the natural production. No trees must be cut within three chains from the banks of the rivers and streams and around the lake shores.

International Paper Superintendents Form Club at Three-Rivers

The newest addition to the list of local sporting aggregations is the Metaberoutin Country Club, recently organized by the superintendents of the St. Maurice Lumber Company, now the Quebec International Paper Company. This club is reopening the former golf course on St. Christophe Island. The officers have been appointed as follows: president, W. W. Braman; vice-president, Tom Ellis; secretary, L. E. McCoy, and treasurer, B. C. Brown.

It is the intention of the club to prepare the course for play during the coming summer. The baseball grounds will be maintained, but arrangements will be made so that baseball and golf fixtures will not clash. The upper part of the island will be maintained as a picnic ground and as a children's playground. Swimming facilities will also be provided in the St. Maurice River.

While the club is organized and managed by the superintendents, others will subsequently be admitted as associate members, and thus participate in its activities.

A judgment of importance was rendered recently by the Court of Appeals of Quebec which unanimously reversed a judgment of Mr. Justice McLennan rendered on November 12, 1924, under which he maintained the claims of a company known as United Manufacturing Co. were recognized with respect to the right or privilege to erect a dam or dams over and upon the St. Maurice River, in the vicinity of the Forges Rapids. The St. Maurice Power have made extensive developments at this site, and are now distributing several hundred thousand horse power, a considerable portion of which is used by the pulp and paper mills of the St. Maurice Valley.

D. Crabtree, who has been general superintendent and manager for the past four and a half years of the Beauharnois Division of the Howard Smith Paper Mills, Ltd., where high grade papers are made, has resigned. This completes 45 years' service in practically all grades of paper making, as he started work in an English mill at 10 years of age. Mr. Crabtree will probably reside in Montreal in the future.

C. P. & P. A. Makes Donation to McGill

The Canadian Pulp and Paper Association feel that the Department of Chemical Engineering of McGill University can perform an important function in connection with the research program that is being developed in the field of Cellulose Technology, and in order to show their appreciation of the work done at the University and to make possible for the University the further extension of its facilities for research and in struction in this field, the executive council of the association at their last regular meeting decided to appropriate $7,500 to the work at McGill.

Disobedience to Orders Proves Fatal

David Jack, a native of Scotland, was crushed to death on June 13th when he fell into a pulp crusher at the Jonquières mill of Price Bros. & Co., Ltd. The body was crushed to a pulp as it was forced through the teeth of the crusher.

Jack was employed in feeding the crusher and had thrown a quantity of pulp into it. He disobeyed the orders of the company by trying to move some of it with his foot after he had thrown it in, and his foot was caught, and he was dragged in. A fellow workman, the only one to witness the accident, ran to shut off the machinery, but he did not reach the switch until Jack's body had been dragged through the machine.

Belgo to Sell News Print at $65 a Ton in 1926

H. Biermans, president of Belgo-Canadian Paper Co., is reported as having stated that his company has notified its customers that there will be a cut in the price of newsprint from $70 to $65 per ton beginning the first of next January. He is further reported as having intimated that as far as the company is aware the customers are content to continue paying the current price of $70 per ton for the last half of 1925.

There is no little puzzlement at the announcement of a new price for a period starting over six months hence, such action having no precedent here. Implying, as it does, the ability to look ahead half a year and see what conditions will be, the announcement is rather mystifying, and some are inclined to seek motives which do not appear on the surface.

Curiously enough, the announcement was made on the same day upon which the Dominion Government, after extremely mature consideration, decided to ratify the Australian trade treaty with this country. This treaty will make news print from Canada free of entry into the sister Dominion, as compared with a present import duty of three pounds sterling per ton.

Laurentide Apprenticeship System Described

At the General Convention on Technical Education which was held in Montreal recently, H. E. Bates, of the Laurentide Company, Grand' Mère, Que., spoke of the benefits of the apprenticeship school, and the training of boys to a trade in the school. He referred to the success of an experiment of this nature by his company which, since 1912, has trained its own employees. Now all the workers are local and have been trained in the trade school organized by the company.

Some of the older employees never went to school at all, starting working when they were 12 years old. The result is that a considerable number of the men have very limited education. The opinion of the firm now is that the boys in school get the fundamentals. They do not come out finished tradesmen, but they get that knowledge which is a great help to them when commencing the practical work. Those boys who, through family circumstances, are unable to attend the school, attend classes at night and the success of these boys is reported to have been very great.

International Extend Their Canadian Timber Holdings

In addition to the large timber limits they already possess through the taking over of the Riordon leases, the Quebec International Paper Co. recently obtained the rights over the large area of timber limits formerly owned by the Gilmour and Hughson interests.

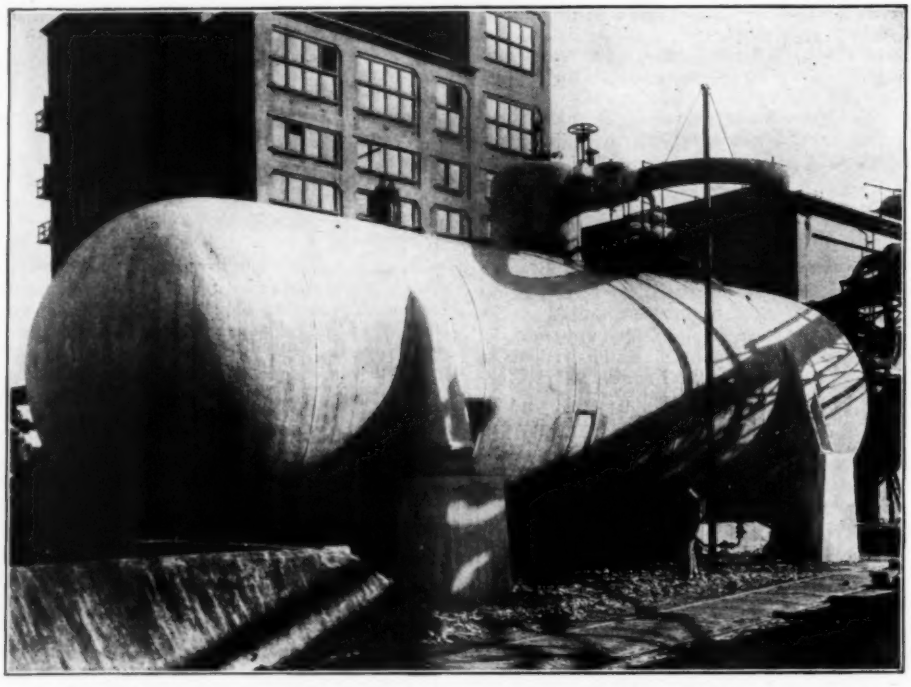
These limits, which are located in the upper Ottawa River region, are said to be about 2,000 square miles in extent, and it is rumored that operations will be started in the course of the next season.

Jury Awards $5,500 for Loss of an Arm

A jury sitting under Chief Justice Martin, at Montreal, recently returned a verdict awarding $5,500 damages to Thomas Laronde, who suffered the loss of his left arm when it was caught in the belt of a machine while he was working for the Riordon Pulp Corporation, Ltd.

On the day of the accident, according to Laronde, while he was supervising the feeding of logs into a barker, he saw that the belt was not working properly. He went under the machine with the intention of applying some belt dressing. In so doing, he slipped, and his left hand was caught between the belt and a wheel. The hand was so badly crushed that after he had spent several weeks in the hospital it was found necessary to amputate the left arm.

The Riordon Pulp Corporation pleaded that Laronde had



Installation in a Pulp and Paper mill. Accumulator approximately 60 ft. long and 16 ft. in diameter—11,300 cu. ft., storing 43,000 lbs. of steam.

Ruths Steam Accumulators

in the

Pulp and Paper Industry

Save Fuel—Speed Up Production

Here are 4 of the many advantages actually reported by owners of Ruths Accumulators in Pulp and Paper Plants.

1. Fuel savings of from 10% to 100%.
2. Owing to elimination of peak load demands on boilers, fewer boilers required to carry given load.
3. Shorter time required for steaming digesters.
4. Owing to greater steadiness of digesting process a more uniform pulp of a higher and more valuable quality was obtained.

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HEAD OFFICE—TORONTO

VANCOUVER, MONTREAL, WINNIPEG

not suffered the injury through trying to apply dressing to the belt, but in negligently trying to adjust the belt while it was in motion by inserting a short piece of leather.

The jury estimated the total damage suffered by the plaintiff at $8,250, but reduced this amount by one-third on account of contributory negligence.

Big Lawsuit Against Paper Companies

An action for $1,700,000, involving pulp and paper companies of Quebec and the United States, and promising interesting developments, was entered recently in the Superior Court, Quebec. It is not expected, however, that the hearing will be possible until next fall.

Through Louis St. Laurent, K. C., Quebec, the Leaside Engineering Co., of Toronto, claim this large amount from the Bayless Pulp and Paper Co., of Binghamton, N. Y., the Ste. Anne Pulp and Paper Co., which was recently incorporated with a capital of $3,800,000, C. E. Taschereau and P. Cantin, notaries public of Quebec. E. A. Walberg signed the declaration connected with the action and is acting for the Leaside Engineering Co.

In connection with the extension of their big paper mill at Three-Rivers, Que., International Paper have ordered fourteen Warren continuous magazine grinders from Charles Walmsley Co. (Canada), Ltd. Eighteen of these grinders have been supplied to the Newfoundland Power and Paper Co., Corner Brook, Newfoundland.

Fire broke out under one of the paper machines in the old mill of the E. B. Eddy Co., at Hull, Que., on the 25th of last month. Operation of the sprinkler system quickly put out the fire before it could do much damage, most of the damage being caused by smoke and water.

Supplementary letters patent have been granted to the Port Alfred Pulp and Paper Corporation, increasing its capital from 30,000 to 60,000 shares without nominal or par value, and 60,000 seven per cent cumulative preferred shares at $100 each.

The present year has been the best in the history of the Province of Quebec as far as forest fires are concerned, for, with the exception of two minor outbreaks which occurred at the start of the season, there has not been a single fire reported.

Provincial Paper Mills, Toronto, have definitely decided to make an exhibit of their various lines of paper at the New Zealand and South Seas International Exhibition, to be held at Dunedin, N. Z., November, 1925, to April, 1926.

ONTARIO

Abitibi Forms Power Subsidiary

The taking over by Abitibi Power and Paper Company of the power plant of Hollinger Gold Mines, at Island Falls, Ont., has resulted in the formation of a subsidiary to the paper company to be known as the Abitibi Electric Development Co., Ltd. The additional expenditures that will be required as a result of the acquisition of the power plant will be provided by new financing in the form of 6 per cent guaranteed notes of the Abitibi Electric Co., interest and principal of which will be guaranteed by Abitibi Power and Paper. The amount of the issue is $1,600,000.

Engineers are now in the field looking for the best route on which to locate the power line to bring the power to the paper mill. It is probable that about ten miles of new steel towers will be required to complete the new line, the present line being used up to the point where a turn must be made right angles eastwards towards Iroquois Falls. There are at present installed two 12,500 K. V. A. generators with a power house of sufficient size to install two more of the same size. While the power line is being changed, two new generators will be installed so that full capacity of the plant will be ready to deliver in about four months.

Electric boilers will be installed at the mill this summer to temporarily use the new power and plans are now being made to increase the mill by the addition of two or three new paper machines in order to eventually use the entire power supply to the manufacture of paper.

Close on 100,000 cords of wood were brought down from Abitibi Power & Paper Co.'s limits in the spring drives this year. On the Quebec side of the boundary 55,349 cords were brought 160 miles and 30,560 cords were floated 33 miles in Ontario. In addition, there were 8,597 cords of wood in pocket booms on Lake Abitibi and Lake Makamik.

A number of changes are to be made on No. 7 paper machine at Iroquois Falls, Ont. The couch roll is being changed to a 36-inch Millspaugh suction couch; the present straight slice will be replaced by a Vandecarr bell-mouthed slice; the wire will be flattened and roller bearings put on the return wire roll and on the breast roll; and there will be one additional Voith screen. All the seven machines are being fitted with oscillating suction boxes and with granite rolls on third presses.

Northern Ontario Paper Mill Towns Safe and Healthy

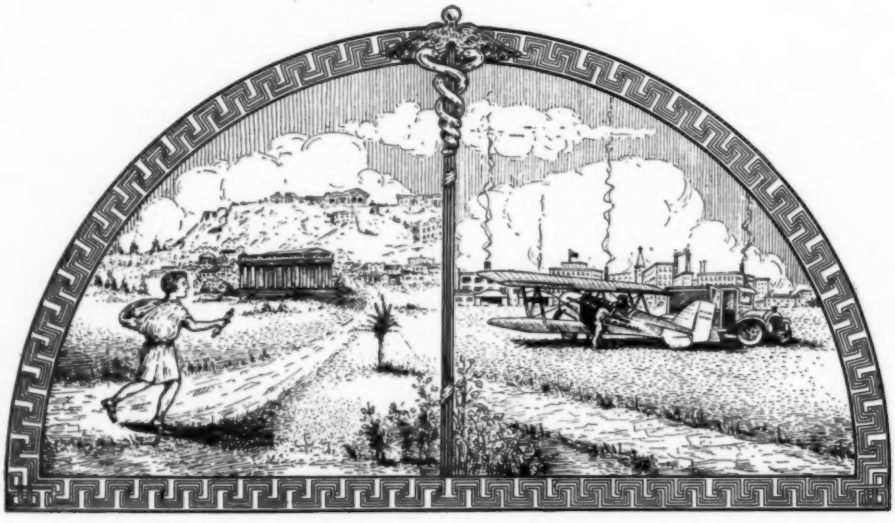
A. R. White, chief sanitary inspector for the Province of Ontario, and A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association, recently paid a visit to the mill of the Mattagami Pulp & Paper Co., at Smooth Rock Falls, Ont., where a public meeting was held in the interests of safety work. Both these gentlemen delivered addresses, as did also S. R. Armstrong, general manager of the company, who assured the employees that the company were sincerely interested in accident and sickness prevention and was willing to back the movement in any reasonable manner. Mr. White, in the course of his remarks, congratulated the residents of Smooth Rock Falls on the fact that during 1924 they had the best health record in Ontario for similar towns.

Messrs. White and Costigane also visited the mill of the Spruce Falls Co., at Kapuskasing, Ont., which mill has a splendid record in accident prevention. Mr. Hoyman, safety director of the Kimberly-Clark Co., Neenah, Wis., presented the employees with a silver-mounted shield and with a loving cup, trophies won by them in two accident prevention contests in which their opponents were the employees of the company's mill at Niagara Falls, N. Y.

An important addition to the industrial life of Thorold will take place as soon as plans have been arranged for a portion of the handsome Beaverboard plant to be used as a newsprint mill, according to authoritative announcement made a short time ago. This does not mean a reduction in the making of the company's well-known brand of Beaver Board, but the concern is now making arrangements and have sufficient electric power to put in an up-to-date paper machine and will turn out newsprint.

A monument to the memory of the late F. H. Anson, in his lifetime, president of Abitibi Power and Paper Co., was unveiled a short time ago at Iroquois Falls, Ont., at the Civic Centre of the town, built up around the pulp and paper industry there by the company. The function was a public one and was representative of the community through the attendance of a number of organizations. An address by Alexander Smith, president of the company, was among the items on the program.

Plans are now under way for the Woodlands Section of the Canadian Pulp and Paper Association to pay a visit this summer to Iroquois Falls, Ont., where an opportunity will be



Giving wings to the written word

WHEN Greek met Greek in the ancient days and business negotiations were started, the final decision usually required person-to-person conference. When it happened that the outcome was delayed and the closing date of the option was near at hand, then indeed did the letter transport of those days reveal its deficiency.

Many a time did the Attic business man write his belated acceptance upon a piece of treated sheepskin imported from Pergamum, roll this about a rounded stick, seal it with a wax impression from his official ring, and entrust it to a fleet-footed son of Hermes. Woe to the business deal if the messenger developed a weak heart or a stone-bruised heel.

The time that it required Athenian "special delivery" to convey a message from that center of culture to Megara, 30 miles away, now serves as quite enough for the winged descendants of Kitty Hawk to lift a half-ton of modern correspondence across the roofs and tree tops between New York and Chicago.

No longer does the mild-mannered sheep supply the basis of written records and the interchange of business agreements. Vegetable fibres—cellulose from shrubs and trees—white, plentiful, and inexpensive, now carry the business world's "yes" and "no."

Hammermill Paper Company
Erie, Pennsylvania

given to inspect the very interesting operation of the Abitibi Power and Paper Co., which have recently put in operation a logging railroad of considerable dimensions for getting out their pulpwood.

During the past winter a total staff of 7,690 men were employed in the pulp and lumber industry in the Thunder Bay district in Ontario, from Schreiber to the Manitoba boundary, according to a compilation of figures from official sources. The aggregate wage bill was close to $3,000,000. In addition a large number of individual settlers were engaged in taking out pulpwood and timber during the past season.

In connection with the taking over a few years ago by the Howard Smith Paper Mills of the Toronto Manufacturing Co., Ltd., the capital stock of the latter company has been reduced by letters patent from $1,000,000 to $500, such decrease being effected by the cancellation of 9,995 shares of $100 and subdividing the remaining five shares of $100 into 50 shares of $10 each.

The directors of the Abitibi Power and Paper Co. paid a visit to Island Falls, Ont., on the first of June to inspect the new power house which they have just taken over from Hollinger. They were accompanied by representatives of three railroads, one or two from Iroquois Falls, and a deputation from Cochrane.

A charter has been granted to the Bailey-Martin Lumber Co., with a capital stock of $150,000 and headquarters at Baptiste, Hastings County, Ont., for the purpose of carrying on a general pulpwood and lumbering business. Wm. O. Bailey, lumberman, of Baptiste, is one of the promoters of the new organization.

To carry on the business of pulp mill owners, lumbermen, etc., a provincial charter has been granted to the Hesson Lumber Co., Ltd., Sault Ste. Marie, Ont. The authorized capital is $100,000, and among the incorporators are Howard F. Hesson, Stanley C. Morgan and Norman Beaton.

At the annual meeting of the Canadian Manufacturers' Association, which was held at Hamilton, Ont., in the early part of June, Jean Rolland, of the Rolland Paper Co., Ltd., Montreal , was elected chairman of the standing committee on tarff.

A recent issue of the Ontario Gazette contains certain announcement of the incorporation of the Manitoulin Pulp Co., Ltd., Kagawong, with power to build and operate pulp mills, paper mills, etc. Toronto lawyers are mentioned as the incorporators.

To carry on the manufacture of paper, paper bags, cartons, and other paper products, Diamond Paper Bag Co., Ltd., has been granted an Ontario charter with an authorized capital of $60,000. Toronto lawyers are mentioned as the incorporators.

A. Legacé, aged 30, was instantly killed on the 18th of last month, at the Sturgeon Falls, Ont., mill of the Spanish River Pulp and Paper Mills, Ltd., when a heavy block of wood from an overhead conveyor struck him on the head.

A. S. Ball, who for the past three years has been a member of the head office staff in Toronto of the Provincial Paper Mills, Ltd., has been moved to the Montreal office, where he will be assistant to Arthur Jewett.

The Consolidated Paper Box Co., which recently started in business in Toronto, have decided to cease operations in that city and will confine their activities to the folding box business in London.

Manitoba Pulp Wood Limits Brought Up at Ottawa

In reply to a recent question of J. S. Woodsworth, Labor member for Centre Winnipeg, as to whether an application had been made to the Government for a second pulp mill concession in Manitoba, and whether a clause in an order-in-council recently passed, prevented the establishment of another pulp mill, Hon. Chas. Stewart, Minister of the Interior, replied that an application had been received from a Mr. Seaman, of Chicago, and that there was nothing in the clause in question to prevent the establishhment of further pulp mills.

J. W. Ward, Progressive member for Dauphin, wished to know if the J. D. McArthur contract tied up all pulp wood in Manitoba, and if not, what areas were still left open for anyone wishing to establish a mill. The Minister replied that there was a reservation, pending selection, on township 46, that there was a further reservation on application being made on Lake Winnipeg for the Manitoba Pulp and Paper Co., and that the Nelson River, Saskatchewan Valley and territory north of Dauphin county were all open for applications by all comers.

Manitoba Will Have News Print Mill

Travers Sweatman, K.C., who has been conducting negotiations with the Federal Government in regard to the establishment of a newsprint mill in Manitoba, has given out the statement that a contract has been signed between the Federal Government and J. D. McArthur, who has been working on this project for the last two or three years.

The agreement calls for the erection of a pulp and paper mill at a cost of not less than $2,500,000; construction to begin within 60 days of the execution of the contract and the mill to be in operation within 18 months. The contract stipulates that there must be a daily output of at least 100 tons of pulp, of which at least 50 per cent must be converted into newsprint at the mill. No cutting of pulpwood is to be started until at least $1,000,000 has been expended on the mill.

While the company is a local one incorporated by Dominion charter, and while J. D. McArthur will continue to be president, it will be operated by the Spanish River Pulp and Paper Mills, Limited.

NOVA SCOTIA

Big Paper Mill for Nova Scotia

In the course of a recent address at Liverpool, N. S., Premier E. H. Armstrong said:

"To my personal knowledge, the Mersey River is likely to have at its mouth the largest news print mill in the Maritime Provinces, and that at no very distant date. For twelve months this project has been in course of very careful development, and those responsible for it have been in consultation with the Government with respect thereto. A site has been acquired and eminent engineers are now at work on plans and estimates.

"To assure this and other industries desiring to locate in Western Nova Scotia a sufficient supply of electrical power, the government has found it necessary, as a matter of public duty, to set free the waters of the Mersey from speculators and monopolists, that not only the paper mill to which I have reference, and of which you will hear more in detail before long, but many other industries as well may be drawn to Queen's County by the opportunity of cheap electric power."

On June 8, at Liverpool, the erection of a 200-ton paper mill, involving the expenditure of $5,000,000 was announced by Frank J. D. Barnjum in accepting the Conservative nomination in Queen's County.

After operating for a couple of weeks, the Bear River pulp mill at Bear River, N. S., has been closed down. It is said that after new machinery has been installed which will increase the output, the mill will resume operations.

The pulp mill pier, at Weymouth, N. S., is undergoing repairs. For many years this wharf was utilized for the ship-

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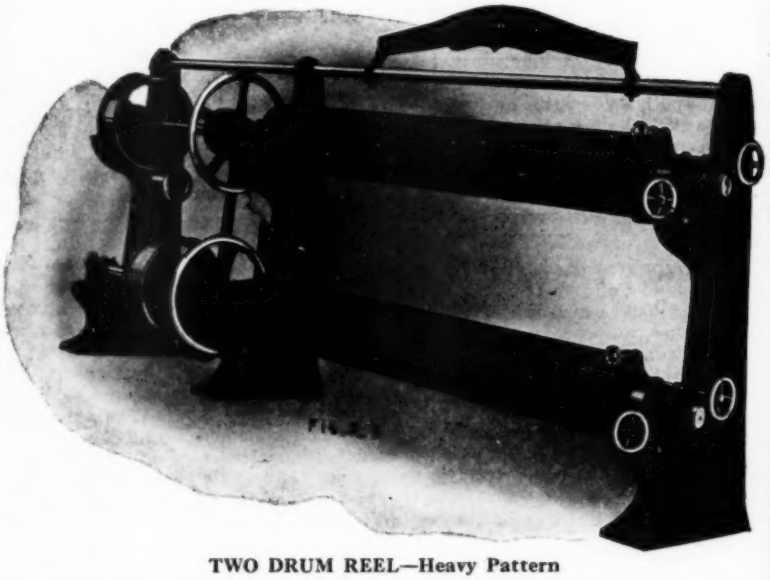

TWO DRUM REEL—Heavy Pattern

Kidder Die Press

For cutting envelopes, paper forms, rubber, leather and cardboard, the Kidder Die Press has proved an economy with many manufacturers who watch their costs closely.

It will help you to cut down the cost of production. It is well built and powerful. Made for long and continuous service with a minimum of power.

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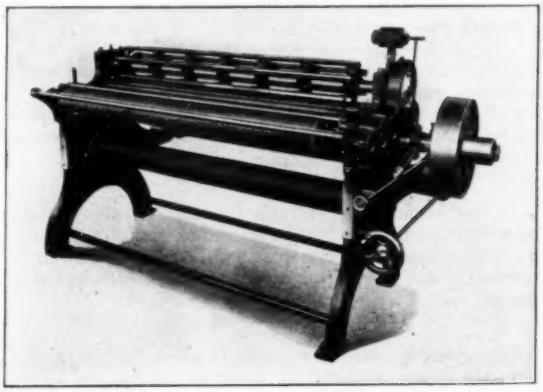

Drum Winder Toilet Machine

THIS machine winds a hard roll. The winding shaft rotates between two drums. The slitters are located in one drum. Various lengths of collars can be furnished for the slitter drum to accommodate different lengths of rolls desired.

Two core shafts are furnished with each machine, also two back stand shafts for Jumbo Rolls. The machine is ball bearing throughout, including the drive pulley.

Hudson-Sharp Machine Co.

Green Bay, Wis.

Selling Agents:
Gibbs-Brower Co., 281 Broadway, N. Y. C.;
166 Jackson Blvd., Chicago

ping of pulp from the Port Clyde and Weymouth mills to England and the United States. In recent years, most of the pulp from these and other mills has been shipped from Digby, N. S., where a new pulp dock was built, warehouse constructed, and extension of railroad made to facilitate shipping.

Frank J. D. Barnjum, Nova Scotia's lumber king and forest conservation advocate, evidently does not intend to immediately put into effect his recent threat to sell all his holdings in this country and make for parts unknown. He was chosen as Conservative candidate for the recent Provincial elections in Nova Scotia, and was elected on the 25th of last month when the Liberals were swept out of power after having held the reins of Government for 43 years.

The conveyor and stacker being erected on the exterior of the new mill of the Albany Perforated Wrapping Paper Co., at Sheet Harbor, N. S., are practically completed. The work was under the supervision of W. W. Wright, who is outside foreman at the mill. About twenty men who had been employed in outside construction operations at the Sheet Harbor mill have been laid off.

NEW BRUNSWICK

New Brunswick Wins Its Fight on Power Scheme

New Brunswick's application to develop the water power on the St. John River, at Grand Falls, has been granted by the International Joint Waterways Commission. No decision was taken in the matter of the claim on the part of the United States to a share of power in virtue of the development being made with international waters. New Brunswick is now in a position to go ahead with its project of developing 50,000 horsepower, and ultimately 75,000 horsepower, the various other arrangements with interested parties being approved, and to appear in the formal order which the International Joint Waterways Commission will issue.

The commission sat all day behind closed doors on the 13th of June, in Montreal, and at the conclusion of the session a statement was issued to newspaper men, who had been excluded from the sittings. The statement read in part: "The commission has granted an order of approval of the plans submitted by the Hydro-Electric Power Commission of New Brunswick for the development of power at Grand Falls, N. B., subject to a number of terms and conditions with reference to the compensation of all parties sustaining damages, or whose property has been in any way taken or injured in connection with the development."

It is expected that this power development will ultimately cause considerable expansion of the pulp and paper industry in New Brunswick. International Paper Co. already intimated a short time ago that they would erect a 200-ton newsprint mill in the vicinity of St. John should there be sufficient power available, and Premier Veniot recently announced that paper mill companies have already made requests for power aggregating 71,000 horsepower.

Dr. E. A. Smith, chairman of the New Brunswick Electric Power Commission, recently stated that a settlement had been arrived at with International Paper Co. whereby the latter will receive $1,200,000 for their rights at Grand Falls, N. B., which the New Brunswick Government has been authorized to develop.

News Mill for Fraser Companies

It is understood that the next project of the Fraser Companies, Ltd., of Edmundston, N. B., will be the construction of a newsprint mill in New Brunswick. Archie Fraser, president and general manager of the company, in a recent interview, stated that the proposition would naturally depend upon cheap power being available, which means of course the development of the Grand Falls. Now that this development is assured by the recent decision of the International Joint Waterways Commission, plans for the new paper venture may

Are You Paying for Power that Never Gets to Your Machine?

In almost every power layout there are leaks and losses. *These can be found and remedied at little cost, either of time or money,* by simply following the clear and detailed instructions given in the new, up-to-the-minute, practical book, "Stopping the Leaks in Power Transmission and Utilization," by Terrell Croft, Directing Engineer of the Terrell Croft Engineering Company, of St. Louis.

May we send you a copy with our compliments? We are sure you will find it interesting and helpful. In clear and simple detail it shows how, with inexpensive equipment, you can test out your power transmission system and run down all the hidden leaks that are wasting your money. It discusses the various types of drives; points out the good features and the shortcomings of individual and group drives; indicates where each may best be used.

As the edition of Mr. Croft's book is limited, copies are reserved for engineers, plant executives, and educational institutions.

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This means that everybody attends and participates in all the sessions and that each day's convention business is concluded speedily and efficiently—a welcome change from the annoying delays and absences that so often interfere with convention programs.

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Delegates may have to go far afield for diversion and amusement at other convention sites, but here, right on the hotel property, are two of America's best known 18-hole golf courses; one, the comparatively easy, older course, practically at the hotel doorstep; and the other, that celebrated championship Upper Course where Walter Hagen won last year's professional title, just a short motor bus ride away. Special tournaments, open only to convention participants, can be arranged.

Here are two well-kept tennis courts—and miles of attractive woodland trails for tramping or horse-back riding, while one of the best stables of thoroughbred saddle horses in America is maintained on the hotel grounds.

The bath department comprises, besides every approved therapeutic bath treatment, an inviting swimming pool; and there is also a separate bath department, with pool, for ladies.

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ADDRESS CONVENTION SECRETARY

FRENCH LICK SPRINGS HOTEL CO., French Lick, Indiana

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be expected to mature as soon as Fraser Companies have completed the mill they are now building at Madawaska, Maine, just opposite their pulp mills at Edmundston, N. B.

Mr. Fraser also added that the future of the paper industry was another consideration. That, of course, is natural, but nobody has any real fears as to the future of the paper industry.

A one-machine mill, with sulphite and groundwood mills to feed it, would require approximately 15,000 horsepower, and the Fraser Companies' plans are regarded as the explanation of financial interests with which they are allied for a block of 20,000 horsepower from Grand Falls, to which Premier Veniot referred during the recent session of the New Brunswick Legislature.

Investigating Straw Paper Possibilities in Alberta

John Bache-Wiig, inventor of a process for converting straw into paper pulp suitable for the manufacture of newsprint, building and packing papers, has been retained by the Alberta Government to make an economic survey of the straw resources of the province, with a view to development of the industry in Western Canada.

Experiments carried out by Mr. Bache-Wiig at the Forest Products Laboratories, Mentreal, with the co-operation of E. P. Cameron, showed that excellent paper could be made from Alberta straw by the Bache-Wiig process. It is hoped that the survey will point the way to the establishment of a new industry in Alberta.

The Powell River Co., Ltd., Powell River, B. C., will shortly start work on a new paper machine room to cost about $400,000. The new unit will be two stories, 120x130 feet, and of concrete construction. A new screen room will also be erected, two stories, 80x91 feet, concrete construction, at a cost of $60,000.

C. G. R. Arbo, formerly with the Riordon organization at Hawkesbury, Ont., Maurice Neilson, T. F. McHenry, G. Murfugen, Alex. Béique and John Stadler are at Corner Brook with the Newfoundland Power and Paper Co. Mr. Stadler is manager of the big mill.

Harland Drives Are Popular

R. M. Norris, of the Harland Engineering Co., of Canada, recently said that over the period of the last seven months the company have received orders for nine of their sectional electric paper machine drives, of which four are for Canadian paper companies, as follows:

Price Bros. & Co., Ltd., repeat order for two drives for newsprint machines 234 inches wide, 1,000 feet per minute. This equipment is now en route to the mill.

Fraser Companies, Ltd., of Edmundston, N. B., a drive for a 168-inch, 200 to 600 feet per minute, specialties machine, for the new mill at Madawaska, Me.

Keewatin Lumber Co. (Backus-Brooks), Kenora, Ont., duplicate drive for the new Bagley and Sewall, 245-inch, 1,000-feet-per-minute, newsprint machine.

Combustion Engineering Corporation, Ltd., announce the appointment of T. S. Morrisey to be sales manager of its eastern district, with offices in the Canada Cement Building, Montreal.

The pulp and paper industry has lost a good friend and helper by the death of C. H. Waterous, president of the Waterous Engine Works, at his home in Brantford, Ont., early last month.

The Dominion Government is inviting Canadian paper manufacturers to exhibit their products at the New Zealand and South Seas Exhibition to be held at Dunedin, New Zealand, this summer, and has offered to look after the transportation of the exhibit from Canada to New Zealand. It is likely that a number of firms, including a few that had exhibits at Wembley, will take advantage of this offer.

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"We're turning more of our time and power into paper since we installed IXL SPEED REDUCERS."

"There are no losses due to slippage—no precious time spent on repairs to transmission equipment. We use IXL REDUCERS on our Agitators, Filters, Beaters, Grinders, Barking Machines, Splitters, Conveyors, and Paper Machines. They are making more money for us."

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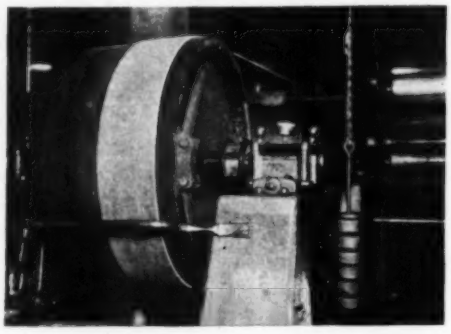


Why Tannate Belts Pay

THE drive shown above had long been a rubber belt drive and, as the report says, "Troublesome on account of stretch, take-ups and slippage; could not keep belt away from shifter. The Tannate was put on October, 1923; taken up, May, 1924, for the first and only time; since then no stretch, no slippage. Belt hardly touches shifter."

This twelve-inch double Watershed Tannate has certainly given satisfaction.

Many paper mills are finding the real economy of Rhoads Tannate Belts.

J. E. RHOADS & SONS

Philadelphia..... 47 N. Sixth St.
New York..... 112 Beekman St.
Chicago..... 334 W. Randolph St.
Atlanta..... 80 S. Forsyth St.
Factory and Tannery, Wilmington, Del.

LOCKPORT Felts

EXCLUSIVE MAKERS OF

Paper Makers' Felts

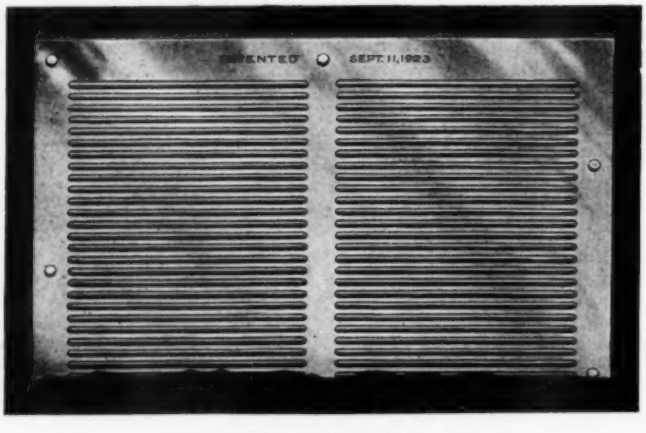
Have You Run Them?
If Not, Why Not?

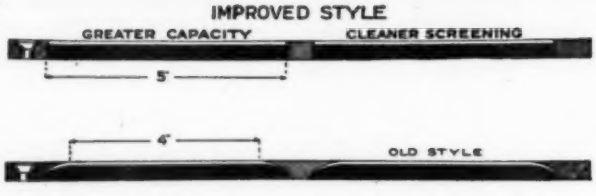
Are You Interested in Accurate Running Felts?

Give Us a Trial
Get Authentic Information
Ask the Men Who Run Them

Yours for service

LOCKPORT FELT CO., Newfane, N. Y.





Fitchburg "New Type" Screen Plates

(PATENTED)

25% greater screening capacity.
Eliminate "plugging-up" and stringing.
Cleanest screening you have ever known.
Fit all types of flat screens.

Performance & Wear Guaranteed

MAY WE SEND YOU A TRIAL ORDER ON APPROVAL?

FITCHBURG SCREEN PLATE COMPANY

FITCHBURG, MASS.

Northern New York News

July 1, 1925.

Union Bag and Paper New Process

The Union Bag and Paper Corporation is commencing to use a new process for the chemical preparation of wood pulp for which it obtained the patent rights recently. The process is still in the experimental stage insofar as its commercial use is concerned, but those familiar with it claim that it will effect a saving of 25 per cent or more in production costs.

In laboratory tests a number of varieties of hardwood have been reduced to workable pulp. Pulp has been made from birch, maple and beech, as well as from spruce, hemlock, balsam and other softwoods. The work is being carried out on a small scale, as special equipment is required, but if the process is all that is hoped, there will be a gradual refitting of the mills. While the new equipment is expensive to install, it is claimed that the saving would more than offset this.

The assessments of the Union bag and Paper Corporation for the building of the new Conklingsville reservoir on the Hudson river will be about $1,300,000 of the total estimated cost of $9,000,000. Assessments for this project, undertaken by the state to regulate the flow of water in the Hudson, in conjunction with companies owning water powers on it, are payable over a period of 50 years. Carrying charges and sinking fund requirements are provided by these owners, most of which are paper companies, and the first $3,000,000 bond issue is expected to be floated shortly.

Development of approximately 25,000 horse power will be possible at the Hudson Falls plant through this regulation. Not only will the paper mills profit through the creation of surplus power, but they will be enabled to run at a steadier rate, with the necessity of occasional shutdowns on account of low water being eliminated.

Union Bag earnings for the first half of this year will run about the same rate as last year, $2.17 a share on $14,604,350 capital stock for 12 months. There has been a small increase in forward business, and a very slight improvement in prices. While the management expects better business during the second half of the year a considerably improved condition in the bag industry must take place before the company regains its former earning power.

Ocean Cargoes in Albany

More than one-fourth the paper mills will eventually use the port of Albany either for receiving materials or shipping the finished product, is predicted following a conference between the Albany port commission and the paper and pulp dealers in the Albany district. Figures presented by Donald G. Kibbey, traffic manager of the A. P. W. Paper Co. showed that there were 250 paper mills in that section of the country, one-fourth of which could utilize the port of Albany.

It was also brought out that engineers have declared that with the deepening of the Hudson river, ice will form but lightly, making it a year around port, with the occasional use of an ice breaker. Guarantee of ten shiploads of pulp wood and other materials annually to the Albany docks was made by Mr. Kibbey. Others, including W. M. McCredie, of the W. H. Smith Paper Corporation; W. H. de Rouville, of the Hudson Valley Paper Co., and Edgar L. Potter, of the Potter-Taylor Paper Corporation, guaranteed the equivalent of 100 carloads for ship handling in the first year, forecasting a rapid increase after that. Mr. Kibbey said that the deepening of the Hudson river would increase the A. P. W. company shipments to Albany by water from 12,000 tons annually to 50,000 tons. Direct shipment to Albany by boat, he said, would cut paper material handling costs from $1.50 a ton to 90 cents a ton. Return cargoes from Albany to New York and other ports could be handled by water at three-fifths the railroad cost. Bulk sulphur, sulphite, wood pulp, bleach and coloring matter would constitute a large part of the incoming trade, he said.

Ernest P. Goodrich, port engineer, said he had in mind several devices to unload paper cargoes from ships. Covered storage spaces for ground pulp were suggested.

The ocean freighter Facto, flying the Norwegian flag, brought to Albany a cargo of 1,100 tons of baled pulp from

YEARS OF SERVICE

— steady, trouble-free service — are hardened into every steel shell which goes into the making of CAMACHINE Score Cutter Backing Rolls. Careful, painstaking heat-treatment of each individual shell results in a finished slitter element which is practically indestructible even when used constantly for heavy duty work. This care, extended through all the operations needed to complete the elements of the CAMACHINE SCORE CUT Method, is one reason for the satisfactory slitting done on Cameron Machines. The principle of slitting is right, and properly carried out in well built, rugged machines, the Score Cut gives exceptional performance over long periods of time without attention.

Showing the finished hardened, ground and polished shells.

Shall we send you full information about the particular CAMACHINE which will slit and wind your product? It is yours for the asking -- a postal card will do.

Cameron Machine Company
61 Poplar St., Brooklyn, N.Y.
[Builders of CAMACHINES]

Paid for out of savings in sixteen months

Powdered Fuel Equipment

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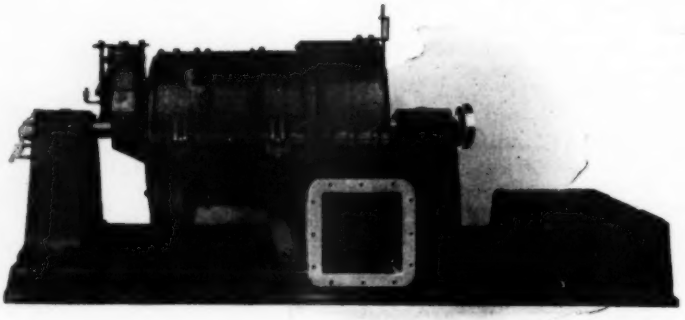
Boilers



Fabricated Steel Work

Grey Iron Castings

A PROMINENT paper manufacturer reports that after sixteen months operation the savings made by installing an

Erie City Unit System of Pulverized Fuel

paid for installing a new 512 h. p. boiler, pulverized fuel fired, and a complete new coal handling and storage system. (Name of company on application.)

Write for complete information and test reports

ERIE CITY IRON WORKS *(Established in 1840)* **Erie, Penna.**

FLEXIBLE COUPLINGS
FOR EVERY CLASS OF SERVICE

No matter what the conditions, whether speed is high or low, for any kind of load—if a FLEXIBLE COUPLING is the solution to your problem, we have the proper type for your particular drive. Put it up to our Engineers to make the selection. *SEND FOR BULLETIN No. 168.*

In addition to a variety of FLEXIBLE COUPLINGS we manufacture a complete line of

POWER TRANSMISSION MACHINERY

including the

U. G. AUTOMATIC ADJUSTER

for Short Center Belt Drives.

MOTOR PULLEYS and SPEED REDUCERS

Special Machinery Built to Order

Flexible Coupling, Type "B."

Flexible Coupling, Type "C."

T. B. Wood's Sons Co., Chambersburg, Pa.

Makers of Power Transmitting Machinery Since 1857

New England Branch: Cambridge, Mass. Dealers in principal cities. Southern Office: Greenville, S. C.

Sheet Harbor, Nova Scotia, and delivered it to the A. P. W. Paper Co. This was the first foreign vessel to dock at Albany and it is significant that paper products formed its cargo. Heretofore, the pulp has been shipped from Nova Scotia to New York where it was reloaded on barges and towed up the Hudson. It was estimated by the officials of the A. P. W. company that a 30 per cent saving in freight charges was effected by the direct shipment. The traffic manager of the A. P. W. company said that ten shiploads of pulp would be brought to Albany in this manner during the navigation season. The value of the pulp in the cargo was $20,000.

An estate estimated at between one million and two million dollars was left by Seth Wheeler, president of the A. P. W. Paper Corporation, who died in Albany, May 22. Most of the estate is stock in the company which he headed. After some minor charitable bequests the estate is divided among the heirs, consisting of two sons, two daughters, and the widow of a son who died in 1908. The heirs have the right to vote at all stockholders' meetings of the company.

Trying to Push Plans for Reservoir

Plans for the regulation of the Racquette river on which there are a number of paper mills have been revived. The plans for building a regulating reservoir on the river last year were abandoned because of the opposition of a number of wealthy land owners along the river. If the scheme is put through this year, only private land will be flooded, so that it will not be necessary to obtain permission of the water power commission.

First application for the creation of the Racquette river regulating district came in 1922 from the International Paper Co. and several other manufacturers along the river. After two years of controversy, the application was withdrawn.

The Power Corporation of New York, a unit in the Carlisle power and paper group, has large holdings along the Racquette, and the regulation of that stream would be a tremendous benefit to that company. It is highly probable that this organization will join with the other organizations interested in the regulation of the stream and build a reservoir. A reservoir with a capacity of 2,000,000,000 cubic feet would be built at Stark which would flood a large section of swamp land and there are other sites along the river which would be capable of development.

The Carlisle interests have purchased in the city of Oswego properties involving water powers. Announcement is made that development costing approximately a million and a half dollars would be made.

H. J. Cadwell Dead

H. J. Cadwell, one of the organizers of the Champion Paper Co., died at his home in Carthage, June 3, after a brief illness, aged 57 years. He was formerly in the wholesale tobacco business, but several years ago with his brother, H. V. Cadwell, he organized the Champion Paper Co. Associated with him were the late James A. Outterson, Mark S. Wilder, Frank P. Wilder and the Ball brothers of Carthage. Nineteen days after the mill started operations, the brother, H. V. Cadwell, was instantly killed when caught in a drive shaft. H. J. Cadwell conducted the mill after his brother's death until May, 1916, when his right hand and arm were drawn into a rewinder, crushing it to the shoulder. He retired from active business life for about a year and a half, following the accident, and then sold the mill. After his return to business activity, he organized the Northern Counties Coal & Supply Co. and became its president. The concern dealt in bituminous coal, supplying a number of paper mills. He was a director of the Northern New York Trust Co.

Otto Bachman, of Watertown, for the past 15 years general contractor for paper mills and consulting engineer, has accepted a position with the Bogota Paper and Box Co., of Bogota, N. J., as chief mechanical engineer and assistant general manager. Mr. Bachman will leave for his new position

More Capacity

Due to a special process of assembling, Gurney Bearings contain more balls of the largest possible size than are used in any other type of bearing. Gurney Bearings therefore have a capacity surpassed by none, operate with greater safety and over a longer period of time, yet require no more attention or lubrication than bearings with fewer balls.

There's a Gurney Bearing designed for every possible load. Let us describe their purposes and capacities.

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BRANDON 3-PLY "TRI-UMPH" AND STANDARD WARP

Deckle Tape and Cutter Webbing—Cotton and Rubber Belting—Enamelled, or Rubber, Fourdrinier Aprons—Rubber Splicing Tissue—Neutral Soap Powder—Dryer Felt Sewing Twine —Superheat Asbestos Packing—Rubber Sheet Packing—Steam and Water Hose "Lambeth" Cotton Transmission Rope

Fitchburg Duck Mills

ESTABLISHED 1844
54 Duck Mill Road
FITCHBURG, MASS.

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DRYER FELTS

English Weave in Two, Three, Four, Five and Six Ply—60 Inches to 176 Inches in Width

Fine Faced Felts for Fine Papers. Absolutely no felt marks in paper. TRIUNE Three Ply Felts for Coarse Papers.

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THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

about July 15. During the past 15 years he has done contracting and consulting work for practically all the paper mills in this section of the state, having recently rebuilt the mill of the Newton Falls Paper Co. He did some work for the General Electric Co., at Association Island, and for the Gould Paper Co., at Lyons Falls. For the past three months he has been with the St. Regis Paper Co., at Deferiet.

F. A. Rogers, of Watertown, treasurer of the Northern New York Utilities, Inc., will be connected with the main offices of the Carlisle interests in New York after July 15. He has been with the Carlisle interests several years, and it is reported in paper mill circles that he will be elected treasurer of the St. Regis Paper Co.

Seeking Freight Reduction

The Hinde & Dauch Paper Co., of Watertown, is negotiating with the New York Air Brake Co. for the lease of one of the wartime buildings of the brake company for storage purposes. During the war, large additions were made to the brake company buildings to take care of munitions orders, and since the war they have been idle. The Hinde and Dauch Co., which operates a 60-ton mill in Watertown, is seeking storage space for three months' product in order to keep the mill running at capacity and have a place for the storage of the surplus. The company manufactures box board paper.

It was reported in Watertown that the company would leave the city on account of the high freight rates. Letters were received from President Sidney Frohman, of Sandusky, Ohio, that the company felt that it could not longer continue its Watertown plant at a profit in view of the high freight rates. In the letter, Mr. Frohman said that the freight rate from Watertown to Sandusky is 31½ cents a hundred, whereas it should be 25½ cents a hundred.

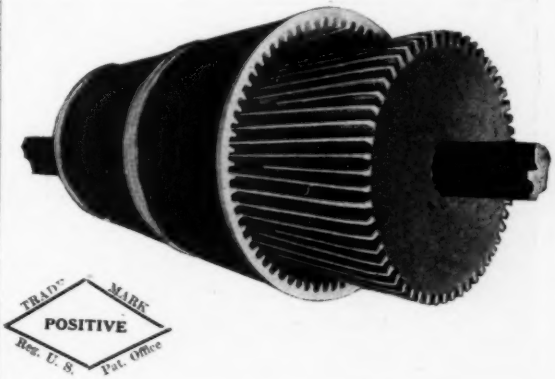
A large number of persons residing at Newton Falls were compelled to leave town one day last month when chlorine gas escaped from the tanks of the Newton Falls Paper Co. The chlorine gas escaped from a defective valve. Three workmen near the tank were nearly asphyxiated but later revived. A strong wind carried the suffocating gas to the residential part of the village, and an appeal was sent to neighboring towns. A large number of persons responded with automobiles and the residents of the town in the gassed area were removed far enough away to insure their safety. Employees equipped with gas masks managed to shut off the flow of deadly gas and the wind carried the fumes away, permitting the exiled villagers to return.

The Eureka plant of the Arrowhead Mills, Inc., at Fulton has been closed indefinitely until business picks up, according to an announcement by the company officials. The mill has been making a base for roofing felts, of which there is an overproduction at present.

Work has been started on the new power plant of the Power Corporation of New York at Deferiet. Fifteen thousand horse power will be developed. Four months will be required to finish the job and the estimated cost is $1,000,000. The power corporation, which is controlled by Floyd L. Carlisle, will be leased to the St. Regis Paper Co. at Deferiet, of which Mr. Carlisle is president.

Attorney Charles E. Norris, of Carthage, has been elected vice-president of F. L. Carlisle & Co., of 49 Wall street, New York. Mr. Norris has represented the Carlisle interests very extensively in the last six months. The various offices of the Carlisle interests in New York, including the St. Regis Paper Co. and the Hanna Paper Co., are being moved to the Wall street address, an entire floor being leased.

Albert D. Merrill, of Watertown, has been granted a patent on his invention of a method and apparatus for bleaching wood pulp. The patent rights on the invention have been assigned to the Stebbins Engineering and Manufacturing Co., of Watertown. The apparatus consists of a main tank with an inner uptake tank, which is provided with an impeller



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If so,

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MARION, INDIANA, U. S. A.

1864 1925

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
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Sold by
BULKLEY, DUNTON & COMPANY
75-77 Duane Street, N. Y.
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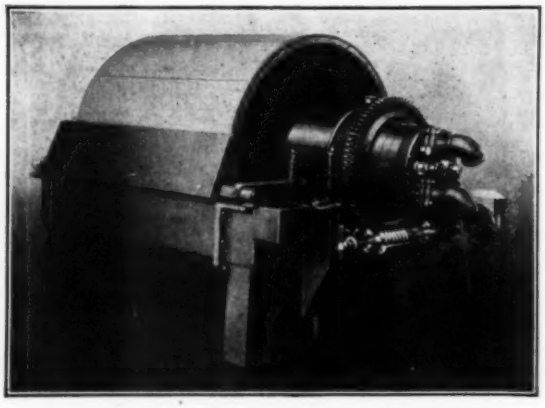
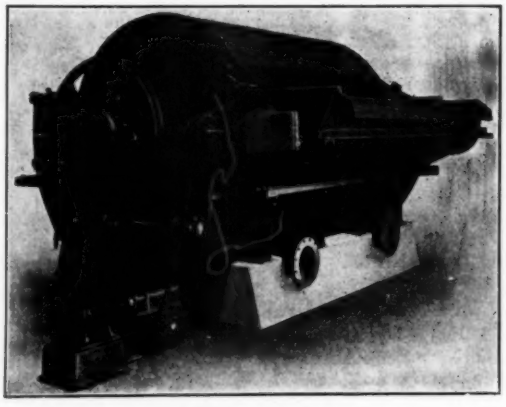


Lime Mud Washing

OLIVERS



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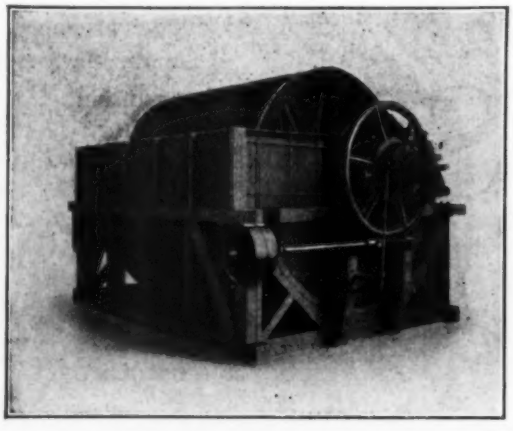
London
11 Southampton Row

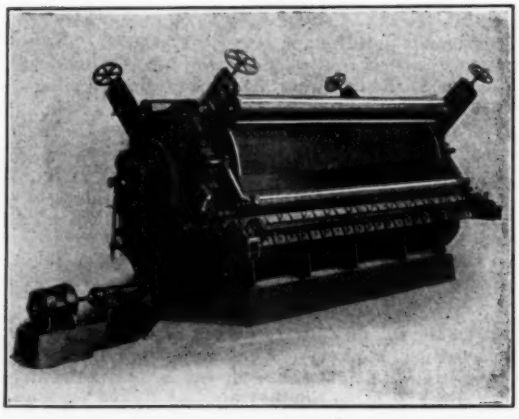
Johannesburg, South Africa
E. L. Bateman, The Corner House

Washing after Bleach



OLIVERS

Thickening before Bleach



screw and a series of pulp impeding vanes to prevent any rotary action of the pulp mass.

Floyd L. Carlisle, president of the St. Regis Paper Co., was among the witnesses scheduled to appear before the interstate commerce commission at Washington in the hearing for a reduction in freight rates in northern New York.

The following officers have been elected by the Malone Paper Co.: President, H. V. Clark; vice-pres. and treas., L. F. Lehr; sec., F. B. Clark; asst. sec. and attorney, A. R. Cornwall.

Fire swept through the warehouse of the Robfogel Paper Co., in Rochester, last month, causing a loss of $30,000. Several tons of wrapping paper and paper products were destroyed.

New York City News

July 1, 1925.

Paper Jobbers Attend Dinner

Close to 300 prominent jobbers of paper in Greater New York, their wives and guests, attended a dinner and dance given by the recently organized Paper and Twine Board of Trade, Inc., of New York at the Hotel Pennsylvania on the evening of June 6. Alexander Aaronson, counsel for the organization, acted as toastmaster. Owing to the extreme heat, the after-dinner speaking program was curtailed, the speakers confining their talks to a few remarks. A gold watch was presented by Mr. Aaronson on behalf of the board members to Michael H. Sincoff, president of the association, and, speaking briefly, President Sincoff responded, expressing his thanks for the gift and outlining the purposes of the organization in promoting better trade conditions for its members as well as the paper trade at large. Former Judge Pollock of Brooklyn and Barnard G. Kaufman made short addresses, following which dancing began and lasted well into the night.

The board was organized early this year. Besides President Sincoff, the officers are Jacob Glekel, vice president; Sylvester P. Nawrath, secretary, and M. M. Cohen, treasurer.

Lasher & Lathrop, Inc., Move

Lasher & Lathrop, Inc., one of the oldest and most prominent paper jobbing concerns in New York, have moved from 29 Lafayette street to 155 Perry street, New York, where they are occupying an eight-story and basement building very conveniently located to railroad and steamship piers for incoming shipments and to the downtown and uptown printing ceters for quick deliveries.

The removal of the company was made necessary by the fact that the business has grown so rapidly the firm was cramped for room in its Lafayette street location. The company was established in 1858 in Beekman street, where it remained until burned out by a disastrous fire in 1916, when it moved to 29 Lafayette street.

The company is selling agent in metropolitan territory for some of the largest fine paper mills in the country, including the American Writing Paper Co., the Hammermill, Crocker-McElwain, Esleeck, Millers Falls, Brown, Chemical, Crane, Collins, Byron Weston, Standard, S. D. Warren and Falulah companies.

The preliminary consolidated general balance of the International Paper Co. and subsidiaries as of April 30 last, filed with the New York Stock Exchange, exclusive of Riordon property changes of recent date, shows assets of $140,222,212 and total profit and loss surplus of $18,175,963. Cash was $1,038,694, while properties and investments were listed at $97,212,357.

The Castanea Paper Co., a Delaware corporation with headquarters in Lock Haven, Pa., which has acquired the mill of the New York & Pennsylvania Company at Johnsonburg, Pa., filed notice on June 17 of an increase in capital from $6,000,000 to $15,000,000. The company has been operating a mill at Johnsonburg on property adjoining the plant it

The Superiority of

Cleveland WORM GEAR REDUCTION UNITS

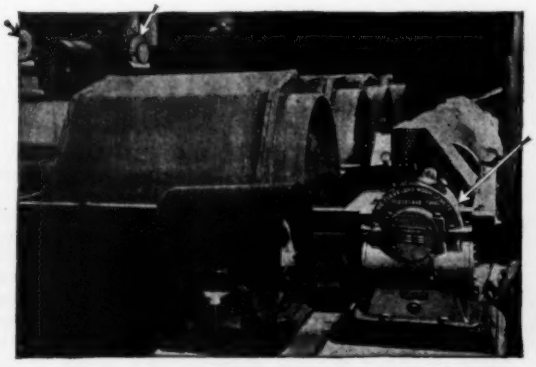
is due not only to better design and manufacture, but likewise to a concrete knowledge of application extending to every basic industry in the country. This knowledge is Cleveland's as a result of more than 12 years of pioneering experience in the field of Worm Gear Speed Reduction.

The tangible results are available to you through the data accumulated in our Engineering Department.

The Cleveland Worm & Gear Co.

"America's Pioneers in Worm Gearing"

E. 80th St. Cleveland, O.



Cleveland Worm Gear Reduction Unit driving Ground Wood Press. Motor 10 H. P., 1200 R. P. M. Speed Reduction 40 to 1.

Pickles' Patent
Automatic Steam Regulator
FOR
Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES **Buckland, Conn.**

SCREEN PLATES *and*
DANDY ROLLS

Watermarking a Specialty

Central Manufacturing Co.
The Quick Service House
KALAMAZOO MICHIGAN

UNION SCREEN PLATE CO.
Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE SCREEN PLATES
(Best phosphorized Cast Metal)

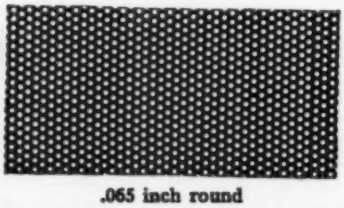
Old Plates RECLOSED and RECUT to accurate gauge
UNION BRONZE SCREWS for Screen Plates
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed

The Witham Screen Plate Fastener, Patented
THE ORIGINAL THE BEST

Remember
WM. A. HARDY & SONS
FITCHBURG, MASS.
Originators and Oldest Manufacturers
OF THE
Cast Bronze Screen Plate
ALSO SPECIALIZE IN
Acid Resisting Digester Parts

THE HOME OF STEEL SHELL BURRS
AND
YELLOW JACKET SHOWERS
All Products Guaranteed to Suit You
F. W. Roberts Manufacturing Company
Read the "ROBERTS IDEA"
Lockport, N. Y. **Niagara Falls, Ont.**

Perforated Metal Screens for Pulp and Paper Mills



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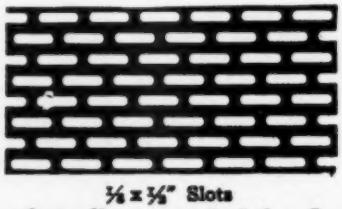
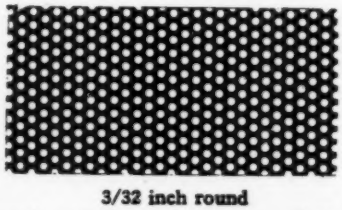


1/8 x 1/2" Slots



3/32 inch round

Steel, Copper, Brass, Bronze and other alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

CHARLES MUNDT & SONS **57-65 Fairmount Avenue, Jersey City, N. J.**

acquired recently, and will now run the latter, consolidating the different departments. Improvements are planned and it is purposed to develop the two mills to a gross of 525,000 pounds of paper per day when operating under a full time basis.

The United Paperboard Co., Inc., with main offices in New York City, has resumed dividends on its common stock, which were suspended early in 1921, by declaring one-half of one per cent on the common in addition to the regular six per cent on the preferred stock, both payable July 1.

I. C. C. Decision on Paper Stock

An important decision whereby, effective August 1 next, papermaking materials, including cotton rags and waste paper, will be accepted by the Delaware, Lackawanna & Western Railroad for loading on freight cars at its local piers, No. 13 North River and No. 26 East River, was handed down by the Interstate Commerce Commission in Washington on June 11. For years the railroad company has refused to accept shipments of old paper and rags at these two piers on the claim of fire hazard, and for years paper stock packers, through their trade associations, have endeavored to have shipments loaded from the piers. The paper stock shippers finally have won their fight, thanks to the efforts of committees of the New York Association of Dealers in Paper Mill Supplies, Inc., and the National Association of Waste Material Dealers, Inc.

M. Gottesman & Co., of 18 East Forty-first street, New York, have announced they have been appointed sole agents for the sale of groundwood of the A. P. W. Pulp and Power Company, Ltd., which, according to the announcement, recently completed a most up-to-date groundwood pulp mill at Sheet Harbor, Nova Scotia. The Gottesman Company has been established since 1886, and handles large quantities of wood pulp of every description.

Harry W. Draudt, western sales representative of Ira L. Beebe & Co., Inc., wood pulp importers and agents of 17 Battery Place, New York, returned from Europe, June 23, after being abroad since February acquainting himself with producing and marketing conditions in pulp.

The Standard Paper Co., of Perth Amboy, N. J., was awarded articles of incorporation at Trenton, N. J., on June 12 to deal in paper with a capital of $100,000. The incorporators were Percy J. Quackenbush, Abraham Kelson and Hyman Holtz, all of Perth Amboy.

The Royce Paper Co., of New York City, was incorporated recently with a capital of $20,000 to deal in paper, twine, etc. A. Cohen, V. W. Simon and E. Forst were the incorporators.

Emmet H. Naylor, secretary of the Writing Paper Manufacturers' Association, returned from Europe on the S. S. Berengaria which docked in New York on July 3.

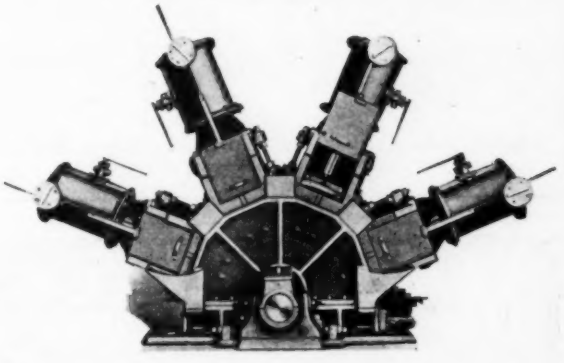
Frank E. Dunaway, wood pulp agent of 52 Vanderbilt avenue, New York, spent the month of June on a vacation at his camp on the shores of Lake Dunmore in Vermont.

The next regular meeting of the Box Board Association will be held on Friday, July 24, 1925, at 11 a. m. (daylight saving time), at The Roosevelt Hotel, New York City.

Philip T. Dodge, chairman of the Board of the International Paper Co., has been elected a member at large for two years of the National Industrial Conference Board.

Eugen Füllner, whose name is intimately identified with the development of Fourdrinier machines and other papermaking machinery in Germany, died at his home in Warmbrunn lately at the age of 72 years.

INTERNATIONAL GRINDERS



Built with either three or four pockets—heavy construction throughout.

Pockets held in position by two large steel bolts—bridge trees extra heavy.

Pockets large in size, so that frequent refilling is unnecessary.

Save-alls below outside pockets catch all pulp when pockets are opened.

Special tapered bronze bushings—thread on inside only.

Bearings very large—wedge adjustable.

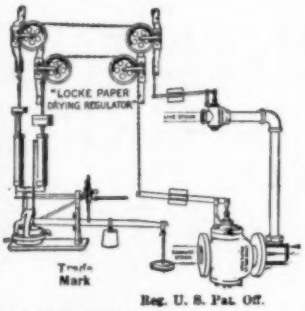
Equipped with Barker valves which are designed so that they stay tight.

Green Bay Barker Co.

Green Bay, Wisconsin

Makers of the Famous Green Bay Barker

LOCKE Paper Drying Regulator



This regulator controls both live and exhaust steam for any purpose where steam is used, or it will control the direct steam when used alone. Is unlike, both in construction and operation, any device that has heretofore been designed for this purpose. Controls not only temperature of the dryers when paper is running over them, but maintains the same temperature whenever there is a break in the paper. This machine is most sensitive to any change in temperature of dryers, yet it has been found to be perfectly reliable and what is more, is not continually getting out of order.

Trade Mark

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Locke Regulator Co., 700 North St., Salem, Mass.

"Locke" Regulator Agency, 39 Cortlandt Street, N. Y. C.
No other agency in N. Y. C.

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"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

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Designed to dispense air with the utmost economy

THE POWELL BLOW GUN is machined from the solid casting and will withstand a great deal of hard usage. There are no springs to lose tension or composite discs to break. They are absolutely tight and will not leak air. They are made with different tips for special requirements.

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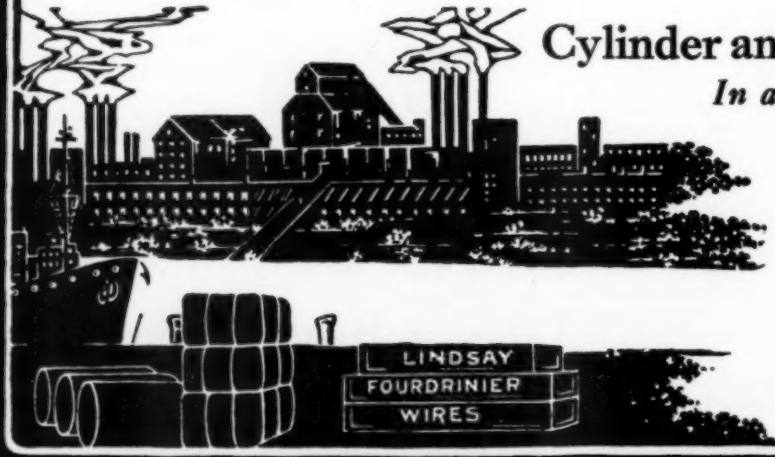
Made in all sizes



Cylinder and Washer Wires

In all Meshes

The Lindsay Wire Weaving Company

Collinwood Sta. Cleveland, Ohio

Michigan News

July 1, 1925.

Bryant Machine Shop Ready for Machinery

The new central stores and machine shop for the Bryant Paper Co. is completed, and with machinery and equipment being installed will soon be in operation. This unit is not only one of the best of its kind in the city, but has the added advantage of consolidatiing under one roof work formerly done in four scattered shops, thus effecting considerable economics in labor and overhead.

The building is located as near as possible in the center of the great Bryant industry and is accessible from all divisions of the plant. It is 59 by 172 feet in dimensions, two stories high. The basement is occupied by the Bryant central stores. All machinery supplies are kept here in steel bins. Everything taken out is delivered on order and with a competent storekeeper in charge, a complete inventory of stock and material on hand will be available every twenty-four hours. The second floor is occupied by the machine shop. It has a wood block floor and construction is planned to carry up to 450 pounds dead weight per square foot. A ten-ton crane makes the handling of heavy rolls and other machinery very simple. On a mezzanine floor, overlooking the main shop area, is an office for the shop superintendent, and fine shower baths and conveniences for the employees. It is a daylight shop, the natural lighting system being perfectly worked out. R. D. Boyer Co. erected this plant.

Work is progressing rapidly on the new defibering system, which is being installed in the Milham division. R. D. Boyer, contractor, says his portion of the work will be finished by July 15. While it has not been necessary to erect any new units in connection with this installation, a large amount of interior construction has been done, as well as much remodeling of present structures. A new bleach tower, 50 feet tall, has been erected adjoining the beater room. New concrete stock chests have been added. Four steel defibering tanks and several of the latest type washers are being installed. Rotaries are to be used for cooking. The system devised by V. D. Simons, Chicago, is similar to that so successfully adopted in the Superior mill of the Bryant Paper Co. It will effect great economies in the preparation and handling of stock, will deliver stock of the proper consistency to the beaters and also result in having of approximately 300 horse power in operation of that section of the Milham division.

Kalamazoo Trading Company to Expand

For the purpose of increasing its storage capacity and providing for further expansion of its business, which has been growing rapidly in the last few years, the Kalamazoo Trading Co. will in the next few days acquire additional land. Albert Meisterheim, president, states that following the acquisition of the site, his company plans to erect an extension to its present storage warehouse, coupling up with the brick building that has been used for years by the Kalamazoo Spoke and Mipple Co.

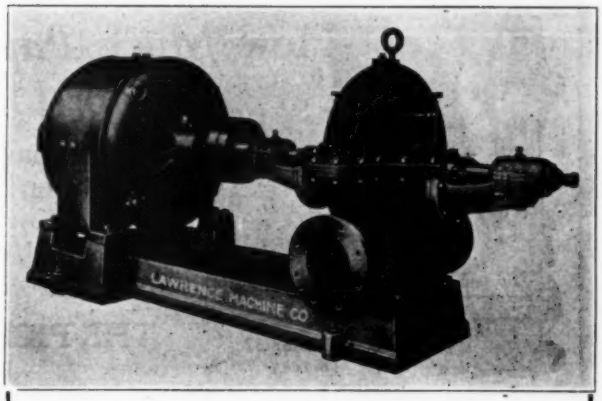
The property involved is now in two pieces, one being owned by the Kalamazoo, Lake Shore and Chicago railroad, and the other by W. S. and Charles A. Dewing.

Mr. W. S. Dewing was president of the Monarch Paper Co. and Charles A. was on the board before the assets of the company were combined with the King Paper and Bardeen Paper Co., of Otsego, to form the Allied Paper Mills.

Five Paper Expansions Under Way

Five major expansion programs by as many paper mills continue to constitute the major items in the industrial development of the Kalamazoo valley district this season. Three of the projects under way are in Kalamazoo and two in Otsego. They represent an aggregate immediate outlay of $500,000 to $600,000 and part of contemplated improvements that will require before final completion the expenditure of nearly $2,000,000.

H. L. Vander Horst is pushing ahead rapidly with the new stock house for the Kalamazoo Paper Co. He has reached the third story and will have the building under roof within 40



LAWRENCE Centrifugal turbine pump, single stage, horizontally split casing, double suction enclosed impeller, high pressure pumps for water supply service, designed and built in all sizes to meet all conditions. Direct connected to electric motors, steam turbines, gasoline engines, etc. Material and workmanship of the highest class. Please submit to our engineering department your specifications. Prompt service rendered at all times.

LAWRENCE MACHINE COMPANY
LAWRENCE, MASS.
Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

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THE ASSOCIATED FACTORY MUTUAL FIRE INSURANCE COMPANIES
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CHICAGO

AUTOMATIC SPRINKLERS

You should carry a stock of Sprinklers on hand. If a fire occurs you can replace the opened sprinklers and restore the protection without delay.

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Main Office: 54 Batterymarch St., Boston, Mass.
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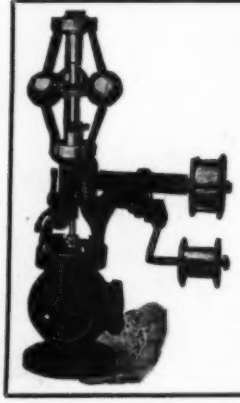

How Much *Paper* Are *You* Losing Because of Uneven Thickness?

During the past three years we have developed wide experience in building Governors for Engines and Turbines in Paper Mill service, resulting in uniformly thick paper, and a considerable increased production.

Catalog 32 on request.

THE PICKERING GOVERNOR CO.
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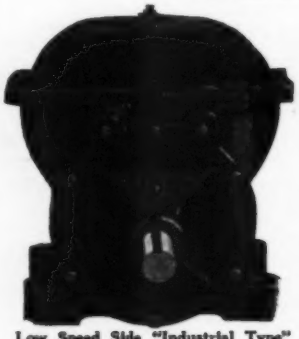
"HILL CLUTCH" MILL EQUIPMENT

Years of Service at Full Efficiency — Not the First Cost

Is the dominant thought in the "Industrial Type" Gear Speed Transformer



Low Speed Side "Industrial Type" Speed Transformer

A nest of plain spur gears revolving in oil changes the revolutions per minute of the input shaft to some desired revolutions per minute of the output shaft. The power transmitted is the same in both shafts. The efficiency is higher than any other form of gearing.

It is the "short cut" from motor to machine or from shaft to shaft where speeds are widely different. It eliminates cumbersome speed changing devices and saves power losses.

The Hill Clutch Machine & Foundry Co.

General Office and Works
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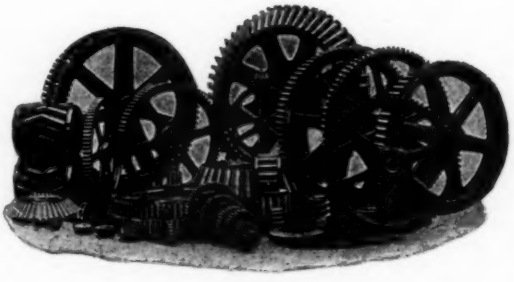
New York Office
50 Church St.

When you want
good gears—remember

POOLE



16,000 different types and sizes.
No patterns used or necessary.
We also make reduction gears, castings and special machinery.

Send for catalog No. 260.

Poole Engineering & Machine Co.
Baltimore, Maryland

THE JOHNSON FRICTION CLUTCH

For Reverse Drive on Paper Machinery

USED on the countershaft, one pulley is mounted on each hub of the Johnson Clutch. Thus, through one open belt and one crossed belt, the operation of a machine may be reversed quickly and easily.

JOHNSON DOUBLE-CLUTCH—EXTERIOR

ALSO, reverse motion may be obtained by installing the clutch between bevel gears on machinery. Spur gears are frequently used to get two speeds on machinery. Equip your paper machines with Johnson Clutches.

Write for Catalog P. I.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

to 50 days. This structure of reinforced concrete is made necessary by the addition of another machine and auxiliary equipment to mill No. 3.

The Standard Paper Co.'s new steel stock house and conversion plant is moving ahead rapidly. R. B. Boyer Co. has this contract and is about ready for a roof. The building has a massive steel frame or upright and will have steel sides and concrete flooring.

The two projects at Otsego under way are the turbine house for the MacSimBar Paper Co. and the new boiler house for the Bardeen division of the Allied Paper Mills. These two units are going forward rapidly and will represent an outlay of fully $100,000 for the buildings, with an added $150,000 to $200,000 for equipment. Both buildings will be under roof long before the fall season sets in.

Bradford Paper Company Busy

C. A. Bradford, president of the Bradford Paper Co., has a force of men engaged in placing the third and fourth Waldron coaters that are to constitute the equipment of that mill on Fulford street. The second super-calendar, a 66-inch Norwood Engineering machine, is in place and running full time. This plant has picked up a splendid line of orders and is running steadily on a 24-hour a day basis. No further building is necessary at this plant, further improvements being in the nature of the additional equipment.

Pacific Coast News

July 1, 1925.

Everett Company Planning Extension

George F. Hardy, of New York City, paper mill designer, has been engaged to draw plans and specifications for the new construction involved in the expansion project of the Everett Pulp and Paper Co. Work on preliminary plans was initiated July 1. Construction will begin immediately upon the final revision and acceptance of the plans.

Two brick buildings will be erected, one south of the present office, which will house the large paper machine, and another north of the office, where the old paper plant will be operated.

The mill is now operating a ninety-six inch and a one hundred and sixty-inch paper machine. Enlargement and renovation of the present building is also contemplated. A. B. Jordan, vice-president of the company, recently returned from the East, where he made a study of the largest and newest paper plants and equipment.

The expansion plans of the Everett Pulp and Paper Company, according to William Howarth, president, will increase its usefulness seventy per cent. The output of paper will jump from thirty-eight tons daily to sixty-five tons.

Steps towards the financing and construction of a pulp mill in Seattle are being taken by the Industrial committee of the Seattle Chamber of Commerce, Chairman R. F. Weeks has announced. Burke Boles, founder of the Northwest Envelope Co., in Seattle, and Eastern financiers who have made a study of the local situation are preparing to submit a definite proposition. The chamber has proved that pulp mills in the Sound country are financially sound and pay good dividends, declared Mr. Weeks.

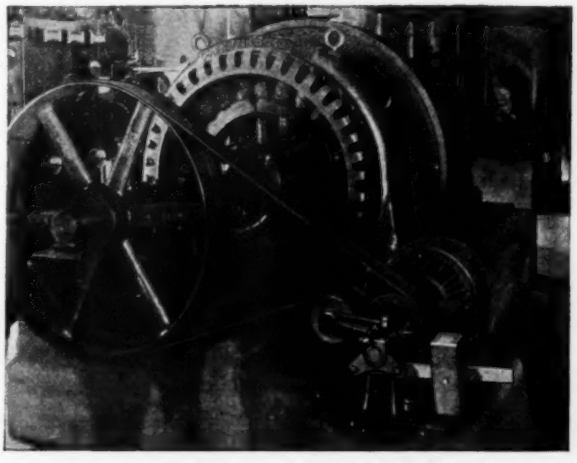
Electrical equipment, including a transformer and twenty motors, have arrived at Anacortes, Wash., and are being installed in the plant of the Fidalgo Pulp Manufacturing Co. The digester will cook twenty-five tons of pulp each day. The main building is completed and work is being pushed on the machine, sulphur storage and wood building. The mill will be electrically equipped throughout for the making of sulphite pulp exclusively.

Mr. F. W. Leadbetter, president of the Columbia River Paper Mills of Vancouver, Wash., the California-Oregon Paper Mills, of Los Angeles, and the Oregon Pulp and Paper Co. at Salem, Ore., has just returned to America from France having arrived in Los Angeles just a day before the earth-

A CONVINCING TESTIMONIAL

A steadily increasing number of LENIXES are being sold for exciter drives. Read what one user says about his installation.

"Replying to yours of the 25th ult. as to the satisfaction we are receiving from the LENIX drives on our 12½ and our 6 kilowatt exciters, would say that they have been in daily use for over five months and we are satisfied with the service they are giving beyond our fondest hopes. In fact, I much prefer the LENIX drive over a direct belt drive on account of the great reduction in belt tension and the reduction of heating in the exciter bearings."



OIL ENGINE DRIVEN 6 K. W. EXCITER
Driving pulley 40" dia., 6½" face, 300 R.P.M.
Exciter pulley 8" dia., 7" face, 1500 R.P.M.
Pulley centers 4' 0"

The LENIX DRIVE
(Registered)

The increasing popularity of the synchronous motor in practically every industry has made the efficiency of the exciter drive a question of prime importance. From the point of view of efficiency and low first cost, the belted exciter is the most desirable. With the LENIX it becomes ideal.

Belt slippage is positively eliminated even on extremely short pulley centers and the automatic action of the LENIX causes it to maintain just sufficient tension in the slack side of the belt to transmit the load.

The LENIX is not an idler. It is a "belt wrapper" scientifically applied to belt drives for the purpose of saving floor space, eliminating belt slippage and increasing the general capacity of the drive.

Send for booklets, Saving Slippage and Space and The Lenix Drive in the Paper Industry

F. L. SMIDTH & CO.
ENGINEERS

50 Church St. **New York, N. Y.**

A new Jennings Hytor for flat box service

The new Jennings Flat Box Pump

Designed and built exclusively for removing the air and water from flat boxes, the new Jennings Flat Box Pump offers several advantages that make it unsurpassed for this service.

It is compact and self-contained, and is a marked advance over other methods, of performing the same service.

Air is discharged directly to the atmosphere without back pressure. Water is returned either to the machine well, or to the beaters or stock chest. By handling the air independently of the water, the Jennings Flat Box Pump functions at high efficiency and effects a material saving in power required for operation.

Complete information and recommendations on request.

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Jennings Hytor

RESILIENT RUBBER ROLLS

It is the "resilient cushion" and not the softness of the roll that takes the water out and gives maximum felt economy at the same time.

Made by

STOWE & WOODWARD COMPANY

The Rubber Roll Makers NEWTON UPPER FALLS, MASSACHUSETTS

THE WATERBURY FELT CO.

SKANEATELES FALLS

New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

quake at Santa Barbara in which city he makes his home. Mr. Leadbetter is expected to make a trip around to the various mills in which he is interested and will remain on the coast for a few months.

There is a new paper mill proposed for the city of Newberg, Ore., in connection with the plant of the C. K. Spaulding Logging Co. This matter has been taken up by the Chamber of Commerce of Newberg and committees have been appointed to work with the management of the Spaulding Co. to bring about the desired end.

Plans Complete for Crown-Willamette Mill at Camas

Mr. A. J. Lethwaite, of the Crown Willamette Paper Co. recently returned from San Francisco bringing with him complete plans made by the office of George F. Hardy in New York for a kraft pulp mill to be built at Camas, Washington. It is reported by the offices here that all equipment has been ordered and that construction work on the buildings will be started at a very early date.

Mr. W. D. Mount of the Glamorgan Pipe and Foundry Co. will install in this mill the latest type of lime sludge recovery and the Oliver Filters will be used for washing the stock instead of the usual diffuser system.

The Powell River Co., Ltd., of British Columbia, with main offices in Vancouver, in Standard Bank Building held a special meeting of the stockholders on Monday, June 29th, called for the purpose of increasing the capital stock from $5,000,000.00 to $10,000,000.00. This was necessary on account of the extensions which are now in progress including a 210-inch machine which will increase their newsprint capacity about 100 tons per day.

Norman McKee Lang, son of the Managing Director Norman R. Lang, recently made a trip throughout the eastern states and northwest Canada inspecting all of the new installations and returned with a lot of new ideas to incorporate in the new installation.

Fire at Columbia River Plant

Promptness on the part of the employees of the Columbia River Paper Mills employees in attacking the flames that broke out on the roof of the saw mill on June 29th probably saved the industry of that city from destruction. Damage was confined to the roof over the carriage of the sawmill, which was covered by a composition roofing.

The saw mill of the Columbia River Paper Mills company which saws lumber from logs and from which the sulphite and groundwood mills get their material for pulp from the waste from this mill is located adjacent to the paper mill and for a short time it looked as though the whole plant including the saw mill, paper mill sulphite and groundwood mills as well as the dock were doomed to destruction. There was a strong wind and only the prompt action of the employees saved the entire industry from destruction.

Promotions in Crown-Willamette Organization

During the month of June there were a number of promotions made in the organization of the Crown Willamette Paper Co.

Mr. A. W. Olson formerly with the International Falls Mill of the Minnesota and Ontario Paper Co. was promoted from the head of the order and shipping department to mill manager of the Lebanon division at Lebanon, Oregon.

Mr. Harold W. Swafford, formerly mill manager of the Lebanon division, has been promoted to mill manager of the Floriston, California, division, a three-machine mill on the line between California and Nevada. When making this change Mr. Walter E. Graves, formerly manager of the Floriston plant, was promoted to a like position at Camas, Washington, where there are nine machines manufacturing a total of about 220 tons a day of news, wrappings, tissues and bags, as well as a bag factory making about two million bags per day.

Mr. Roy O. Young, formerly mill manager of the mill at

Progress in Paper Making

WITH progress in American paper making, we are concerned and connected. To commemorate the advances that have been made, the more important annals of the industry will be recalled from month to month in this space.

Improvements Attempted on Cylinder Machines

Methods of improving the formation of paper made on cylinder machines have been frequently attempted; the first of which we have found record was the patent of Reuben Fairchild of Trumbull, Conn., in 1829, which consisted in the introduction of an agitator in the vat, vibrating in the direction of the length of the cylinder. Culver and Cole, of Massachusetts, applied at the same time for a patent identical in principle, and afterward arranged for a mutual ownership. In the same year, a patent for the same purpose was obtained by Isaac Saunderson of Milton, Mass.

Established 1842

Cheney Bigelow Wire Works

Experienced and Progressive

Fourdrinier and Cylinder Wires
Dandy Rolls and Cylinder Moulds
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SPRINGFIELD, MASSACHUSETTS

"You can say good-bye to rust when you paint with BITUMASTIC"

The Paint Question

Your search for a paint that will stand up under moisture, chemical fumes and heat conditions comes to an end when you begin using BITUMASTIC SOLUTION. It gives enduring protection to metal buildings and roofs, structural steel, tanks, pipes, stacks, boiler fronts and breechings and other steel surfaces. It has a fine glossy finish that lasts. The sooner you start using BITUMASTIC, the sooner your worry over the paint question ceases.

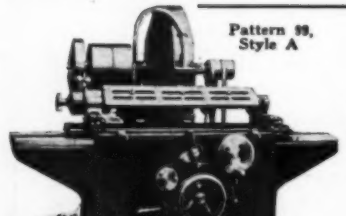
The most convincing argument in favor of the use of BITUMASTIC SOLUTION is the performance of the paint itself. We are willing, therefore, to send a sample can, without charge, to interested executives and engineers.

SINCE **BITUMASTIC** 1854

WAILES DOVE-HERMISTON CORPORATION

17 BATTERY PLACE, NEW YORK

322 S. Delaware Ave., Philadelphia — Union Trust Building, Cleveland



OUR KNIFE GRINDERS HANDLE KNIVES FROM 30 INCHES TO 17 FEET IN LENGTH

A descriptive circular is yours for the asking

We also make Abrasive Wheels for Knife Grinding

THE SPRINGFIELD MFG. CO.

320 Mt. Grove St. Bridgeport, Conn.

Ticonderoga Machine Works

TICONDEROGA, N. Y., U. S. A.

MANUFACTURERS OF

WARREN IMPROVED CALENDER DOCTORS

With Flexible Blades, Universal Adjustment and Control (PATENTED)

WARREN IMPROVED PATENT DOUBLE DRUM WINDERS

Patent BALL VALVE Hydrant
Stock Circulating Systems *and*
other Paper Mill Specialties

SEND FOR OUR BULLETIN

AUTOMATIC GRINDERS

200 Lbs. to Ten Ton Weight

For Knives 26 inches to 19 feet long

Automatic Traveling Wheel Grinder

Straight wheel, cup wheel, ring wheel, sectional block wheel, sandstone wheel, grinders.

Full automatic, semi-automatic, and hand machines.

Stationary wheel and traveling work or stationary work and traveling wheel.

Belt or motor drive.

Open frame or fully enclosed, completely self-contained, cabinet base machines, for every variety of service.

Send for Catalog Covering New Type Machines

Machinery Company of America

Big Rapids, Mich., U. S. A.

Camas, was promoted to a like position at West Linn, Oregon, where there are nine machines manufacturing 300 to 325 tons of newsprint and where the first General Electric sectional drive was installed some five years ago.

Mr. C. W. Morden, formerly mill manager of the West Linn, Oregon, mill was promoted to an engineering position in the offices of the company in Portland, Oregon.

All of these moves have been completed and the new officers installed in their new positions.

All of these young men have come up from the ranks in the various mills of the company with the exception of Mr. A. W. Olson, and in one or two cases they started as office boys.

Mr. L. A. Benecke, vice-president of Cupples Co. of St. Louis, Mo., made a tour of the most important Pacific Coast cities during the last half of the month of June and visited the mills of the Columbia River Paper Mills of which he is a director.

Ohio News

July 1,-1925.

Mills Hold Annual Picnics

No better evidence of company spirit has ever been shown than in the outings of several paper manufacturing plants in Middletown during the past month. The Gardner-Harvey Paper Co. gave its employees their annual picnic on June 20 at LeSourdsville lake, which has left—as it always has in several years past—a keen desire among every individual in the company from the officials down to the most minor attache a keen desire for next year's picnic.

The company gave approximately $250 away in prizes, which produced high competitive spirit among the departments and several mills for months in advance of the event. Teamwork resulted in the sharing of large sums of money that were presented as awards to the winners. Many prizes added novelty to the dance in the evening that brought the affairs to a close.

The combined forces of the two Crystal paper companies held their first annual picnic at Gordon park on Saturday, June 27, this being an established yearly event with these employees from the first moment of the outing.

Salesmen of the Raymond Bag Company gathered here during the week of June 8 to report to the head office of the progress they had made in representing the firm in all parts of the country the past year. These district salesmanagers of the company were instructed further as to the company's policy of distributing its products and of the enterprising methods of good salesmanship. Several social features for the wives of the visiting salesmen and the combined interests of the visitors were outlined and staged on schedule as recreational offerings.

Alvan T. Simonds Economic Contest for 1925

For the past three years, Alvan T. Simonds, president of the Simonds Saw & Steel Co., of Fitchburg, Mass., has offered rewards to students of economics for writing essays. Cash awards amounting to $1,500.00 have been made each year.

These educational contests have been conducted and provided for by Mr. Simonds personally, the object being to promote the study of economics generally.

The subject for the 1924 contest was "Sharing Our National Income." The contest was open to all students in the high schools and normal schools of the United States and Canada, and six of the nine prizes were won by students of the Alexander Hamilton High School of Commerce, Brooklyn, N. Y., which gave its students a preparation for the contest probably equalled at no other secondary school in the United States.

The Alvan T. Simonds Prize Contest for 1925 has for its subject, "Your Prosperity and Mine." This contest is open to all residents of the United States and Canada, and it is hoped that it will especially appeal to business executives, assistants to business executives and students of busines and commerce. Complete information about the contest can be obtained from the Contest Editor, 470 Main Street, Fitchburg, Mass.

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Move Your Stock Easily

You can move the heaviest rolls easily, safely and quickly! Marion Dolly Trucks save time and material. They cost no more than ordinary Dollys, but embody many new and exclusive advantages. Built low and with sloping skids; easy to load and unload; frame curved to hold rolls of paper and barrels firmly in place.

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Marion, Indiana.

TEAR OFF AND MAIL

Memo. Send complete information, prices and special 10-day trial offer to name and address in margin.

"Nary A Spark—"

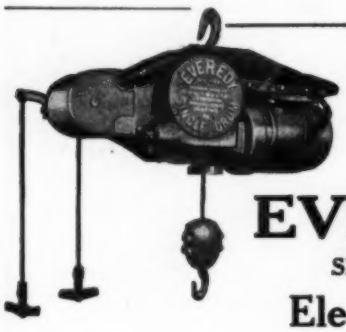
from the motor when we started, then jerked the loaded hoist into reverse.

"Show me," he said, so with the loaded Everedy Hoist traveling downward, we jerked the cord into reverse, with "nary a spark" from the motor.

Ed. Harwick was the hardest man we ever had to sell. But Ed. will tell you himself that "no other hoist has so convincingly demonstrated the superiority of its motor as the Everedy."

This motor is designed especially for hoisting, built to endure. It is easy on the commutator and brushes, maintaining a high operation efficiency.

Besides the Everedy is the most accessible hoist made. Light—500 lb. hoist weighs 215 lbs.; 1000 lb. hoist 250 lbs. Speedy—40 ft. per minute A. C., 33 ft. per minute D. C. Limit stop at top and bottom, adjustable to any point. Suspended wherever a chain or air hoist is placed. Investigate! READING CHAIN & BLOCK CORP., 2110 Adams St., READING, PA. *Manufacturers Reading Multiple Gear Chain Blocks, Trolleys, Reading Traveling Cranes.*



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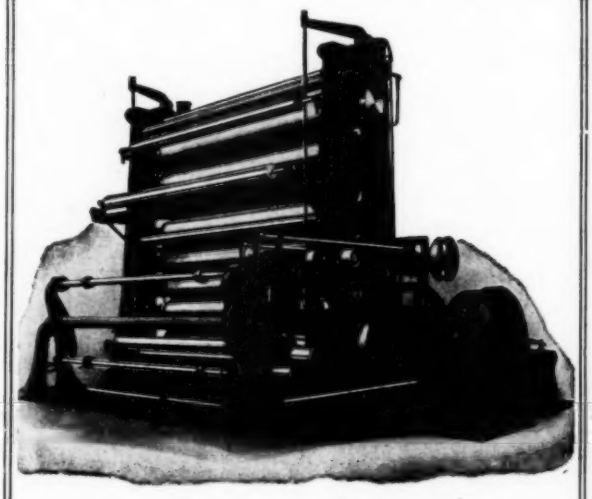
Electric Hoists

NORWOOD
SUPER CALENDERS



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Maine University President Is Chosen by Michigan

Announcement of the appointment of Dr. Clarence C. Little as president of the University of Michigan to succeed the late Dr. Marion L. Burton, was made at the office of the acting president on July 3. Dr. Little resigned the presidency of the University of Maine on the day before.

Dr. Little was notified of his appointment by W. L. Clements, a regent of the university and chairman of the joint committee of the presidency. He is expected to assume his office here at the commencement of the new school year. His resignation at the University of Maine becomes effective Sept. 1.

Dr. Little came to the University of Maine three years ago from Long Island, where he was connected with the Carnegie Institute for Experimental Evolution. It is considered likely that the university may go a year without calling a new president, as was done after the resignation of Dr. Robert J. Aley, Dr. Little's predecessor. In the meantime, a committee representing the trustees and the dean would be in charge.

Dr. Little in his letter of resignation, wrote:

"My action is in no way prompted by any unpleasant factors, but by the fact that I have been offered an opportunity to try, on a very large scale, the educational policies which the State of Maine has not as yet been willing to adopt. At the present time the State of Maine is lacking woefully in its support of its state university. It has departed somewhat from an absolutely inadequate appropriation in 1922, but it is still far from realizing its obligations, and even from adopting as generous an attitude as that shown by smaller and poorer states."

Combustion Engineering Receives Large Contract

The Combustion Engineering Corporation Limited, Toronto, has just received an order from the Canada Sugar Refining Co., of Montreal, for a very large Ruths accumulator system.

The accumulator proper will be 16 ft. in diameter by 55 ft. long, and has a capacity of 40,000 lbs. of steam between a pressure range of 90 to 20 lbs.

In conjunction with the Ruths accumulator system, the Canada Sugar Refining Co. has also placed an order with the Combustion Engineering Corporation for two 1,000 K. W. Erste Brunner non-condensing steam turbines, taking steam at 300 lbs. gauge, 100 degrees superheat, exhausting at 90 lbs. gauge. These turbines show the remarkably high efficiency of 75 per cent and will be manufactured by Messrs. Stork & Company, Hengelo, Holland. They are the first high efficiency non-condensing turbines of this type to be sold on the North American Continent.

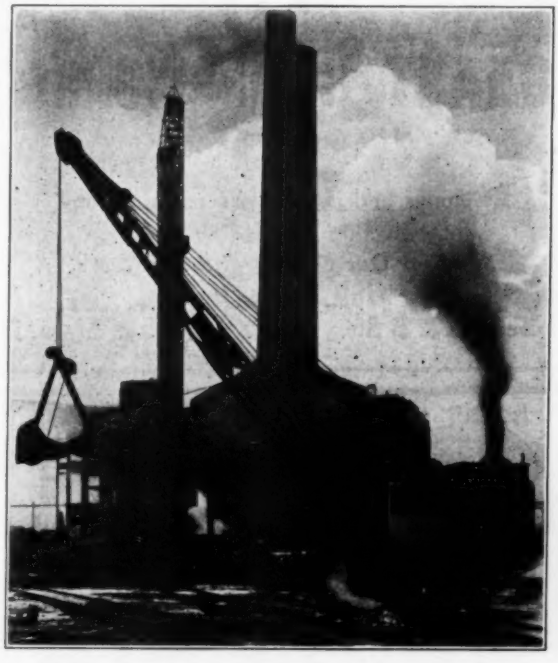
Metz-Dyestuff Business Acquired by General Dyestuff Corp.

The General Dyestuff Corporation has acquired the dyestuff business heretofore carried on by H. A. Metz & Co., Inc., the Consolidated Color & Chemical Company and the Central Dyestuff & Chemical Company, together with their stock of dyestuffs, and will in future act as the sole importer of the dyestuffs manufactured by the Farbwerke, vormals Meister Lucius and Bruening of Hoechst a/M, Germany.

Mr. B. A. Ludwig, formerly vice-president of the National Aniline & Chemical Company, who was recently appointed the sole importer of the products manufactured by Messrs. Leopold Cassella & Co. of Frankfurt, joins this company as a vice-president and director and brings to it the agency for Cassella Products.

The main office will be continued at 122 Hudson Street, New York City, with branches at 130 Oliver Street, Boston, Mass.; Turks Head Building, Providence, R. I.; 132 Chestnut Street, Philadelphia, Pa.; 449 North LaSalle Street, Chicago, Ill.; 301½ West Trade Street, Charlotte, N. C., and 20 Natoma Street, San Francisco, Cal.

The Union Bag and Paper Company is enlarging the capacity of its power plant at Sheboygan, Mich., by the installation of a new, four-retort, Type H Taylor stoker manufactured by the American Engineering Company, of Philadelphia. This installation is in addition to a number of Taylor stokers already in use in their mill.



Enclosed Roller Bearing

vs.

Wheels on an Open Track

"AMERICAN" Locomotive Cranes rotate on twenty conical steel rollers running in an enclosed dirt-proof path. The weight of the machinery deck does not fall on the roller axles but on the rollers themselves—and there are so many of them and the load is divided so equally among them that the load on any one roller is never excessive. There is ample facility for lubrication and grit cannot get into the grease. Contrast this perfect roller bearing with the practice on other makes of cranes which turn on wheels or rollers running in an open path or track exposed to dirt and moisture. In the summer such paths cannot be lubricated as the rollers are liable to slip and wear flat spots on themselves, and in winter they often do the same—grease or no grease.

Smooth rotation, long life—these are only two of the superior advantages conferred by the "AMERICAN" Roller Bearing. They help to make the "AMERICAN" Locomotive Crane the most economical machine of its type.

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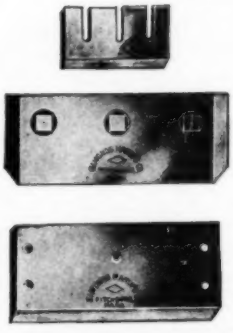
SIMONDS
Barker & Chipper Knives



If your mill equipment includes Simonds Barker, Chipper and Paper Cutter Knives you are assured of a cutting service that will stand up. Made of Simonds' own steel these knives will give long service and withstand wear.

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Fitchburg, Mass. Chicago, Ill.

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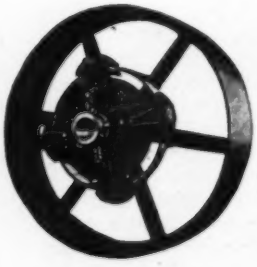

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BELT AND ROPE DRIVES
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THE FALLS CLUTCH & MACHINERY COMPANY

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Swenson Reclaiming Machinery
for Soda and Sulphate Mills

SWENSON EVAPORATOR CO.
(Subsidiary of Whiting Corporation)
Main Office and Works: Harvey, Ill., (Chicago Suburb)
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Our Experiment Station at Ann Arbor
is equipped to make tests, on a commercial scale (under the direction of Prof. W. L. Badger) on problems involving evaporation, crystallization, heat transfer, etc., at a moderate charge.

International Purchases Bastrop Mill

International Paper Company has closed a contract for the purchase of the Bastrop Pulp & Paper Company of Louisiana. It is understood that possession of the property will be taken over during the month. The Bastrop mill is reputed to be one of the lowest cost producers of kraft paper on the continent.

The manufacture of kraft paper from southern pines is a development of only comparatively recent years. This wood can be delivered to the mill so cheaply that its costs are much less than those of the northern mills even after allowing for freight differentials.

The Bastrop mill has a present daily capacity of 70 tons of pulp and 50 tons of paper, but it is understood that the International Paper Company plans substantial further expansion in this territory with a view to availing itself to a greater extent of the low cost of production which it affords.

New Catalogs, Booklets, Etc.

W. B. Connor, Inc., 223 W. 33rd Street, New York City.—Catalogue "A" shows in detail the design, construction and method of operation of the A C E Corliss Valve Steam Trap, manufactured by this company. Copies may be had upon request.

Combustion Engineering Corporation, 43 Broad Street, New York City.—A 24 page booklet, entitled "Report of Evaporation Tests on Boiler No. 1, Power House No. 1, River Rouge Plant of the Ford Motor Company," has recently been issued by this company. Illustrations show the equipment used in the tests and interior views of the plant. Four tables are shown covering the eleven separate tests and a short description given of changes in plant equipment which is now being undertaken by the Ford Company. It presents the story of how carefully boiler and furnace efficiencies are checked and the amount of money and work involved in doing this work correctly.

Dean Hill Pump Co., Anderson, Ind.—Catalogue No. 125 describes in a general way the complete line of centrifugal pumps and steam turbines made by this company.

Dodge Manufacturing Corporation, Mishawaka, Ind.—"Dodge Story of Big Facilities and Big Jobs" is an elaborate book which has been issued recently, visualizing the engineering, foundry and machine shop facilities of that company available for the manufacture of special machinery and equipment. The book also shows a wide range of special equipment built by the company.

Graver Corporation, East Chicago, Ind.—Bulletin No. 509 describes the Graver Zeolite Water Softener which is designed to give maximum results in treating water, both as to the rapidity with which the capacity of the Zeolite can be utilized and the very short installation period.

Lewis-Shepard Co., Boston, Mass.—The annual publication, entitled "Jacklift and Stacker Practice," shows 33 installations of jacklifts and stackers, including a brief description of each one. This company also announces a new type of lift truck platform in a folder which has just been issued by them.

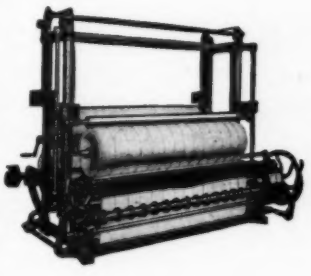
Link-Belt Company, 910 S. Michigan Ave., Chicago.—A new Link-Belt book descriptive of clean water intake screens has just been published. The forepart of the book is given over to a brief description of the general construction of the Link-Belt screens, and follows with more than thirty elaborate views of various installations.

Riley Stoker Corporation, Worcester, Mass.—The mechanism and application of the Jones "Side-Dump" stoker is fully described and illustrated in this company's publication No. 90. Pictures of a number of installations are also shown.

The Superheater Company, 17 East 42nd Street, New York City.—"Superheat Engineering Data" is the title of a handbook on the generation and use of superheated steam, and is the sixth revised edition. This handbook contains data for steam power plant engineers and operators, much of which has never before been published, and for th's reason it fills a rather unique place. It is bound in Keratol, 4½ x 7 inches, 208 pages, 85 illustrations and diagrams, 69 tables. The price of the book is one dollar.

The annual cut of lumber in Finland is 1,143,000,000 cubic feet, and annual growth 1,568,000,000 cubic feet.

The Greatest of All Bargains



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PATENT TOP SLITTERS

Hamblet Machine Co.
LAWRENCE, MASS.

Wanted Immediately

One Second-hand 50" to 62" slitter and rewinder. State full particulars.

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WANTED

Salesman to sell bond, tissues, waxing and other papers. Answering give age, experience, reference, salary, etc. P. O. Box 1621, Milwaukee, Wis.

FOR SALE: Slightly Used Beaters.

1—1200 Lb. Iron Tub Beating Engine.
1—2000 Lb. Allen Breaker Beater (nearly new).
1—1200 Lb. Breaker Beater. (Can be made into a regular beating engine.) Will sell the above "as is" or factory rebuilt. Also:
3—800 Beating Engines, rebuilt with new wooden tubs.

THE NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y.

Robins Conveying Systems

FOR HANDLING BULK MATERIALS

Write for Handbook of Conveyor Practice

ROBINS CONVEYING BELT COMPANY

New York Chicago Pittsburgh Boston

WEBSTER QUALITY

Steel and Malleable Chains for Pulp and Paper Mills

WHATEVER the type of chain that best meets your own peculiar requirements, Webster has it, and when you have made sure that the chains you employ in your mechanical handling devices bear the —Z— trade-mark of the Webster works, you have gone a long way toward profitable operation in your plant.

Webster chains for mechanical handling devices in pulp and paper mills consists of pintle chain, detachable chain, combination steel and malleable iron chain, riveted and detachable drag chains, and steel pushed roller drive chain.

Our 96-page catalog No. 46, covering our complete line of chains and sprockets, will be forwarded to you on request.

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Paper Machinery For Sale

One FOURDRINIER TISSUE PAPER MACHINE—takes wire 126".
Two presses; nine dryers 48" x 118"; calender, reel, drum winder. Self-contained Marshal drive.
One PUSEY & JONES FOURDRINIER PART—takes wire 126" x 60 ft. New Century shake; Millspaugh suction roll and Connersville pumps.
Moore & White four drum winder 118"; 120"; 96"; 72".
One 86" stack machine calenders; bottom roll 24" diameter; three 12"; top roll, 22".
One 82" stack machine calenders; nine rolls.
Two 72" stack machine calenders.
Four 66" nine roll Holyoke super calenders.
Seventeen dryers 36" x 84".
Twenty-one dryers 36" x 66".
One 84" Moore & White late type sheet cutter.
Four 60" Hamblet sheet cutters with Moore & White layboys.
Four Jones beaters 66" x 57".
Two Noble & Wood Monarch Jordans.
One Noble & Wood Pony Monarch Jordan.
One Jones Wagg Majestic Jordan.

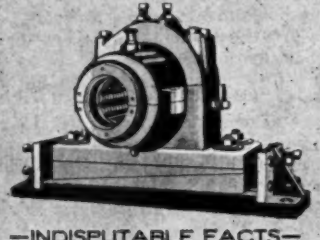
For sale by

FRANK H. DAVIS CO.
175 Richdale Ave. Cambridge, Mass.

"VALLEIRON"

"HERCULES HYATT"

DUST PROOF ROLLER BEARINGS
POWER TRANSMITTING APPLIANCES



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THE ROLLERS ARE FLEXIBLE: Their slight flexibility takes care of irregularities in the surface of the shaft as well as all shaft distortions caused by belt pull or misalignment of shafting.

IT IS SELF-LUBRICATING because each of the hollow helically wound rollers acts as its own oil container and oil distributor, insuring positive lubrication over all rolling surfaces. There is no oil leakage and the economy is such that lubrication three or four times a year is sufficient in most cases.

IT IS DURABLE because its steel rollers are capable of giving years of hard service with no appreciable wear. It is not affected by shock loads, vibration or by other loads within the capacity of the shaft.

POWER SAVING: By eliminating 50 to 80 per cent. of friction, make possible a saving of 10 to 25 per cent. on the whole power transmitted. This power saving at forty to fifty dollars per horse-power per year will result in a return on the investment of from 50 to 125 per cent.

VALLEY IRON WORKS
WILLIAMSPORT, PA., U. S. A.

"VALLEIRON"

Griley-Unkle Engineering Co. Changes Hands

The Griley-Unkle Engineering Co., of Monroe, Mich., having executive offices at Lancaster, Ohio, has been sold to a group of gentlemen in Fort Wayne, Ind., headed by Mr. C. M. Niezer, president of the First National Bank of that city. The main offices of the business have been transferred to Fort Wayne. The new concern has retained Mr. H. J. Andrews as general manager of sales and production. The Michigan company has been dissolved, while the Indiana company has been incorporated. Mr. Charles W. Unkle, the patentee of all of the machinery and systems of the company, remains as consulting engineer.

The Griley-Unkle Engineering Co. is well known in every paper making point in the world, having originated the continuous beating engine, and the company is unique in having no competition. This is purely an engineering proposition, and unbelievable results have been accomplished in a great many mills. At the present time 543 extractors are operating in 131 mills in the United States, Canada and foreign countries.

The Griley-Unkle Engineering Co. is now perfecting a device that does everything in a beater but pull the plug. They have also perfected and are putting on the market a new system of coloring paper.

Reconstructing Power Plant

The Fairfield Paper Co., Baltimore, Ohio, are reconstructing one of their present power plants and bringing it up to date in all particulars.

The rejuvenation of the plant consists of the removal of the present four (4) 150 H. P. tubular boilers, hand fired, and replacing them with two (2) 312 H. P. Stirling boilers. In connection with the new boilers two (2) Detroit multiple retort stokers, having five (5) retorts each have been purchased. This is the second Detroit Stoker installation, the first one in 1921 consisting of three (3) Detroit single retort underfeed stokers.

The auxiliaries include a Buffalo Forge fan, direct connected to a 20 H. P. variable speed motor and each stoker is to be motor driven. The plant is to be modernized in every detail, with a coal and ash handling system, and the ashes are to be removed at the rear underneath the Stiring boiler drums.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 15248—Paper spoons, forks, plates, and similar goods. London, England. Agency desired.

No. 15249—Paper hats, pressed. Johannesburg, South Africa. Agency desired.

No. 15430—Machines for envelope making. Santiago, Chile. Purchase desired.

No. 15452—Photographic paper. Sao Paulo, Brazil. Purchase desired.

No. 15407—Paper machine felts. Barcelona, Spain. Agency desired.

No. 15560—Filter paper, The Hague, Netherlands. Purchase desired.

No. 15557—Floors, wood pulp. Vienna, Austria. Purchase desired.

No. 15559—Paper, all kinds. Buenos Aires, Argentina. Purchase desired.

No. 15561—Paper, all kinds, including stationery, oil paper and wrapping paper. Tokio, Japan. Purchase desired.

No. 15556—Wall paper. Riga, Latvia. Agency desired.

No. 15579—Wrapping and toilet paper. Bahia, Brazil. Purchase desired.

No. 15278—Sulphur, 25,000 tons a year. Goteborg, Sweden. Purchase desired.

No. 15257—Soda ash, 20 tons. Amoy, China. Purchase desired.

Pack joints to *stay*

Users know that Jenkins Packings do not squeeze out at the joint, crack, nor crumble. Delays and overtime work are avoided by eliminating much unnecessary repacking.

Jenkins Packings obtainable in sheets or ready cut gaskets include JENARCO, a red vulcanized packing for hot and cold water and saturated steam; JENKINS '96, a black unvulcanized packing for hot and cold water and saturated steam at all pressures; COMPRESSED ASBESTOS JOINTING, for high pressure super-heated steam; and OILTITE, as its name implies, for oil service.

May we send you a folder descriptive of Jenkins Sheet Packing Gaskets?

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JENKINS BROS., Limited
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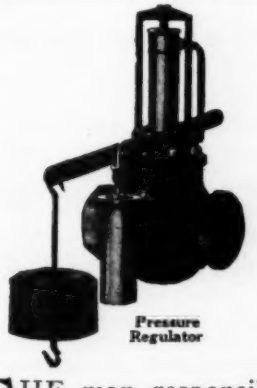
Jenarco Sheet Packing

Jenkins Ready-cut Gaskets

Fig. 227, Pump Valve

Send for schedule of principal compounds and services for which Jenkins Pump Valves are guaranteed.

Jenkins Packing



Pressure Regulator

THE man responsible for keeping down power costs knows Davis Valve Specialties as dependable steam guarding and saving devices—constructed simply and as near fool and trouble-proof as they can be made.

G. M. Davis Regulator Co.
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DAVIS VALVE SPECIALTIES
STEAM SAVERS SINCE 1875

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A lubricant for Beater bearings

—*that gives the "film of protection" and reduces operating temperatures*

THERE are many parts of paper mill machinery that are difficult to lubricate correctly—and the beater bearing is one of them. This is because such tremendous pressures are placed on these bearings. Extremely high operating temperatures result.

But according to the enthusiastic testimonials of many of our satisfied customers, we have considerably less trouble lubricating beater bearings correctly than our competitors have. And we have evidence in our files showing that beater bearing temperatures have been reduced from 250°F. to 120°F. through the use of Tycol Medium Fibre Grease—the lubricant recommended by our Engineering Bureau for beater bearings, both open and enclosed.

One of our Staff Engineers will be glad to call and present this evidence to you, and tell you more about the Tide Water Power Group.

If your beater bearings are of the open type, he has a practical suggestion for lubricating them that will make his visit doubly worth your while.

The FILM of PROTECTION

—for paper mill machinery

In their application to each phase of paper mill lubrication, the lubricants comprising the Tide Water Power Group form the "film of protection," *thin as tissue, smooth as silk, tough as steel.* The application of the Tide Water Power Group to your machinery will give you economical lubrication—maximum power, uninterrupted operation and increased production.

The Tide Water Power Group

TYCOL GEAR COMPOUND
TYCOL LUBRICANT No. 1
TYCOL YARN GREASE
TYCOL H. T. GREASE
TYCOL MEDIUM FIBRE GREASE
TYCOL GEAR COATING SOFT
GRENOL STEAM CYLINDER OILS
DYNOL ENGINE AND TURBINE OILS
TYCOL LUBRICATING GREASES
CLAROL MACHINERY OILS

TIDE WATER LUBRICANTS

TIDE WATER OIL SALES CORPORATION

ELEVEN BROADWAY NEW YORK

Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Sulphite Pulp from Various Parts of the Pine Wood

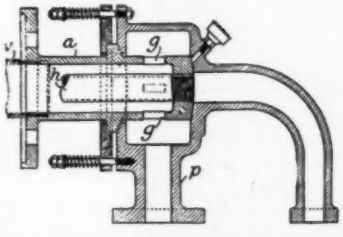
A PAPER which is possessed of a very great tearing length is made from the pulp that is manufactured with a digestion liquor which contains a large amount of lime and not too large an excess of sulphur dioxide. When the lime content of the digestion liquor is reduced, the strength of the paper that is manufactured from the sulphite pulp thus produced is considerably less than when the concentration of the sulphurous acid in the liquor is increased. As far as the moisture content of the wood is concerned, it may be stated that the strength of the paper made from the pulp does not depend on this factor in any manner.

The middle portion of the tree, it has been found, will yield a somewhat greater quantity of paper stock than the top part of the tree—that is, the logs that are cut from that portion. The difference in the yield is approximately one per cent. In the case of the wood of the branches, it has been noted that the yield of paper stock is approximately ten per cent less than from the trunk of the tree. Furthermore, the paper that is manufactured from such stock is considerably less strong than paper made from trunk stock. This is due to the fact that the disintegration of the wood of the branches takes place at a disproportionally greater speed than that of the trunk wood. Zellstoff und Papier 5, pages 81-3.

Drying Cylinders

THE following illustration shows a type of drying cylinder which has been patented in England.

The central tube (h) rotates with the steam (a). This comprises a stem and socket which has coacting surfaces of different radii but with a common center. The surfaces are held in contact by a spring-pressed collar mounted upon studs which are secured in the socket. In use, steam passes through the extension (p) and the ports (g) in the stem into the cylinder, while the exhaust steam and condensate pass away through the pipe (h). An additional tube (v) may be secured to the stem to distribute the steam.



Paper from Wood

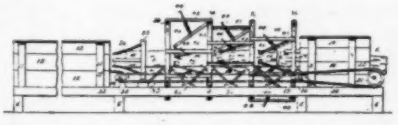
IT IS claimed that there are many disadvantages present in the process of manufacturing paper pulp from wood as it is practiced today. In the grinding of the wood, cumbersome logs must be handled, and during the grinding process, the surface that is exposed to the action of the grindstones varies in area with the result that the pressure applied to the log of wood against the stone changes and an irregular product is obtained. The large consumption of power in the grinding operation is also of moment.

Then again, the known process of making cellulose by chemical and then mechanical means necessitates extremely large plants and a large labor force with the simultaneous consumption of a large amount of power in transporting the materials around the plant. It must be mentioned that the projects that have been proposed up to the present time for alleviating these adverse conditions have proven unsuccessful.

The object of the invention, which is patented in British Patent No. 229,853, is accordingly to overcome these difficulties. The method proposed therein is based on the general plan of breaking up the wood preliminarily by boiling or chemical means. Then, while the operation is proceeding continuously, the broken up wood is mixed with the requisite amount of filling materials, for example, kaolin, and jointly with pieces of raw wood. The grinding of the mixture of wood, etc., is accomplished in one operation with the result that a final product is obtained which can be directly employed for making paper on the paper making machine. The apparatus in which this operation is effected comprises a grinding stone of conical shape and a grinding jacket surrounding the same and a space between them constituted at the incoming end by an abruptly enlarged and distinct preliminary grinding chamber, flaring outwardly from the passage, forming the final grinding chamber between the parallel walls of the conical grinding elements. A conveyor or compressor worm is provided in front of the enlarged end of the space between the grinding surfaces.

Pulp Wood Peeler

THE accompanying illustration shows an apparatus for peeling the bark from pulp wood. The apparatus consists of a base frame to which there is fastened an endless conveyor belt. This is located at the receiving end of the base frame. Transversely extending bars are carried by the belt for engaging the logs to feed them in the direction of the movement of the belt. At the discharge end of the apparatus, there is also provided an endless conveyor for removing the logs from the belt. Along the sides of the apparatus there are located a number of resilient bark peeling knives between the endless conveyors mentioned above. A circular series of reversely curved resilient arms are carried by the frame at one end of the peeling knives and similar set of arms curving inwardly are carried by the frame at the other end of the group of peeling knives. These devices are for the purpose of centering the logs while they are being peeled. Means are provided for driving the endless conveyors in unison. United States Patent No. 1,539,603.



Water Resistant Paper

THE process in principle consists in treating the paper with acid substances or formaldehyde, or with both. The paper is then dried and subjected to a heating process. Colloidal substances may be added in conjunction with the usual waterproofing materials. Such substances as casein, animal glue and the like are employed for this purpose. The treatment of the paper with these collodial substances can precede its treatment with acid-acting substances, such as calcium chloride, magnesium chloride, etc.

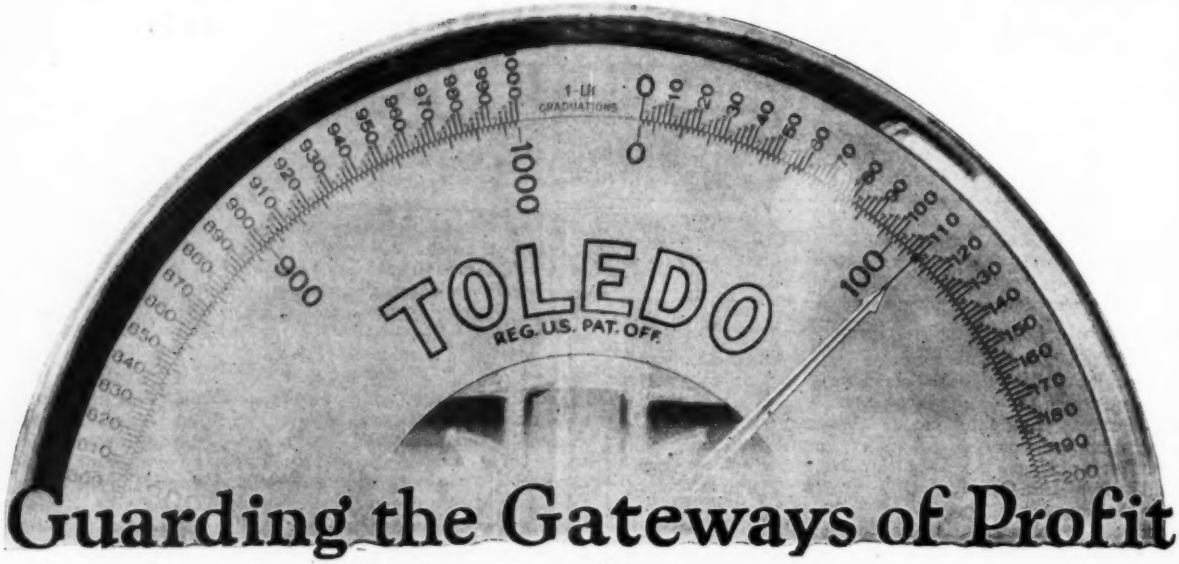
Papers of various special properties can be obtained by suitable methods of treatment, for example, flexibility or suppleness by treatment with certain hygroscopic substances. It is also possible to color the paper by the incorporation of the proper coloring matters.

Further details of the process are found in The World's Paper Trade Review, 1925, page 1398.

Degree of Delignification of Cellulose

IT IS very interesting from one standpoint or another to be able to determine the degree of the delignification of cellulose. The main trouble with the methods usually employed for this purpose is that they are too difficult for the average chemist to carry out.

A new method has been devised which is described originally



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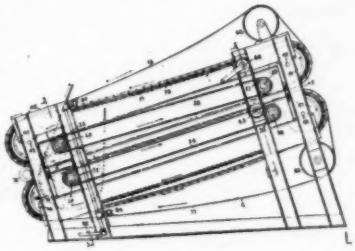
in the Pappers och Travarutidsckrift for Finland and subsequently in Le Papier, 1925, page 325. This method is based on the fact that when a given quantity of cellulose is placed in contact with a definite quantity of potassium permanganate, the absorption of this reagent by the incrustating materials in the pulp will be the more rapid, the less pure the pulp is. It is therefore possible to express the degree of delignification of the pulp by means of a coefficient.

The permanganate is used in a concentration of one hundredth normal and is acidified with a little sulphuric acid before it is employed.

About two grams of the dry pulp are employed and mixed with eighty cubic centimeters of a hundredth normal solution of potassium permanganate and 1.6 cubic centimeters of normal sulphuric acid. The time it takes for the permanganate solution to decolor is noted. The temperature must be maintained constant during the test.

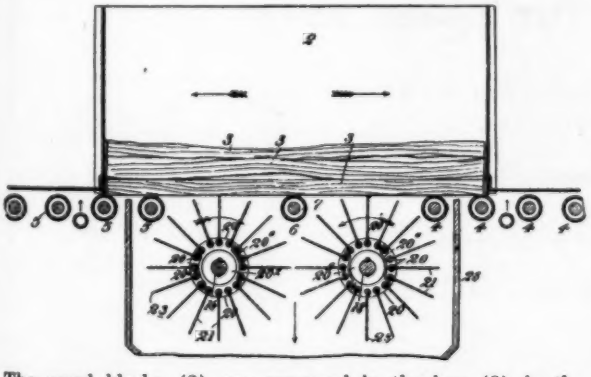
Making Fiber Board

THE apparatus which is shown in the accompanying illustration is for the purpose of making a fiber board of considerable thickness. The method employed comprises mixing the paper fiber with an excess of water so that the individual fibers interlock with one another in all directions. Then the water and fiber are forced under great pressure into a forming chamber and conveyed through that chamber with progressively increasing mechanical pressure, while the water is permitted to escape until the desired thickness of board is attained. The mechanical pressure is applied laterally and the material is compressed thereby while confined against escape or displacement by the formed board at one end and the force feed pressure of the water and fiber at the other. U. S. Patent No. 1,539,542.



Disintegrating Machine for Wood Pulp

THE illustration shows a new form of machine which is employed for the disintegration of wood to make mechanical wood pulp. The wood (3) is contained in a box (2) which is open at the top and bottom. This box is given a forward and backward motion during the operation of the machine.



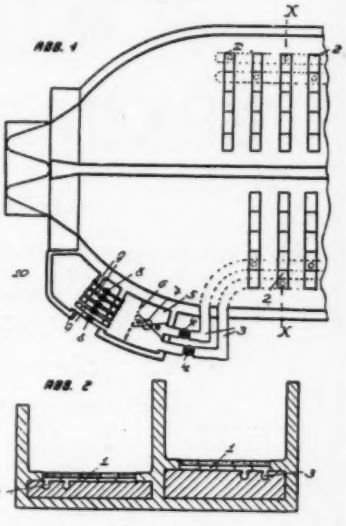
The wood blocks (3) are arranged in the box (2) in the direction of its length. Underneath the box there are two rolls (4) and (5) and these in conjunction with the roll (6) formed the supports of the box. When the shaft (7) is made to rotate the box (2) is given a longitudinal motion.

The actual disintegrating apparatus consists of a series of rings or collars (20'), which are arranged on the shaft (18), and which are fastened by means of a number of cotter pins. A number of cutting blades or knives (21) are arranged over the circumference of the rolls.

When the disintegrating device is rotated, the teeth of the device are subjected to centrifugal action and the sharp points of the teeth (23) come in contact with the surface of the wood in the box (2). The shaft (18) is driven most conveniently with the aid of an electric motor and a high velocity is attained. The speed reaches the height of 2,500 revolutions per minute. German Patent No. 410,699.

Wash and Bleaching Hollander

IN THE bottom of the beater which is seen in the accompanying illustration there are arranged a number of transverse channels (1). These channels are provided with a number of conical openings which are narrow to start with and then widen out in the lower part. The channels are alternately connected with one or the other of two or more passages (3) which run under the bottom of the floor of the beater. The outlets to these passages are controlled by valves (4) and empty out into a box which catches the stock, as shown at (5). This box has an opening in its bottom which is closed by the valve (7) which serves to retain the low density stock. A metallic screen is also shown at (6).



The box (5) is connected with the box (10) by means of a series of pipes (9), which are provided with a series of valves (8). These pipes are arranged one over the other in a step arrangement and the diameters of the pipes increase from the bottom upward.

The water from the beater is accordingly made to pass through the channels (2) into the passages (3) and then into the box (5) where the stock that has been carried along with the water is caught on the metallic screen (6). The water from which the stock has been removed flows through the tubes (9) into the dehydrating box (10), whereby in accordance with the height of the water level in the beater, the topmost valve (8) first is opened and then the other valves (8) in descending order. German Patent No. 412,380.

Bleaching Sulphate with Hypochlorite Solutions

IN THE bleaching of sulphate pulp with hypochlorite solutions, two actions can be differentiated, one the removal of the lignin, and two, the attack on the cellulose with the formation of oxycellulose and degradation products. A number of experiments were made with the intent purpose of determining the best means for removing the lignin from the wood with restriction of the action of the reagent on the cellulose itself. The experiments were based on three criteria.

In the first place the amount of bleached product that is soluble in one hundred parts of a three per cent caustic soda within a period of one hour at a temperature of 100 degrees C. was determined. This gives information on the amount of degradation products and oxycellulose formed during the bleaching. Then the amount of available reagent "absorbed" during the bleached (determined iodometrically) was found. This absorption is due partly to the oxidation of the lignin and partly to attack and oxidation of the cellulose. Then there was determined what might be called the "lignin value" of the bleached product.

In the original article which is published in the Jur. of the Soc. of Chem. Ind., 1925, 233Tff., considerable details are given on the method used in determining the lignin value of the bleached pulp.

Tests were first made in bleaching a typical commercial sulphate pulp with bleach liquors containing varying proportions of available chlorine. A series of experiments was then made to establish the effect of free alkali (lime) in the bleach liquor on the course of the bleaching.

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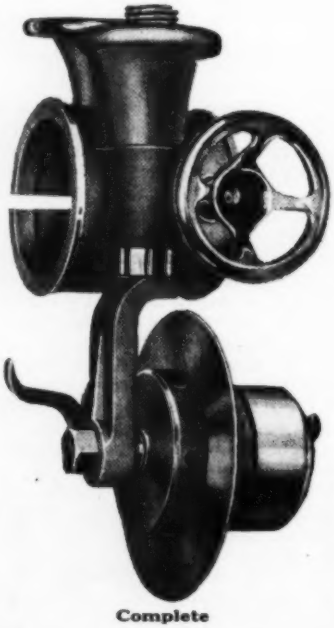

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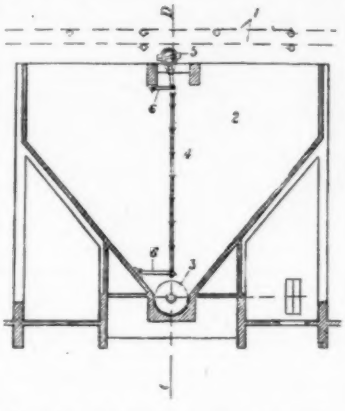
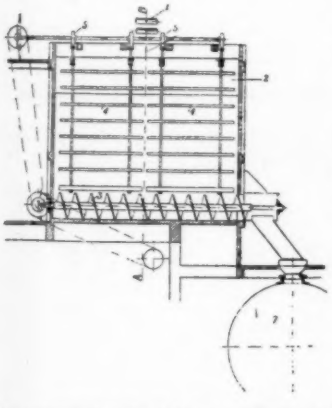
It was found that when the bleach liquor not saturated with lime was used, degradation products were formed after several days, and these products were more susceptible to further oxidation than the original cellulose. It was also established that the presence of a maximum amount of dissolved lime in the bleach liquor considerably retards the formation of these easily oxidizable degradation products.

Storing and Charging Paper Stock Into Digesters

THE object of French Patent No. 587,720 is to provide a means for storing paper stock and feeding it into the digesters. The use of the apparatus which is shown below serves to reduce the labor cost involved in feeding the digester by hand, and also accelerates the process at a minimum consumption of power.



The apparatus is shown in Figures 1 and 2. The stock, which has been previously ground up and prepared for digestion, is fed into the apparatus by means of the belt conveyors (1). The stock drops into the storage bin (2). This bin may be constructed of wood, sheet metal, fiber-cement, etc. The lower part of the storage bin is practically semi-circular in form and at the bottom there is arranged a screw conveyor (3) which removes the stock from the bin.



Inasmuch as the paper stock does not move freely and is apt to cling together in masses which block its downward movement in the bin, there is provided an arrangement in the form of a harrow. This is seen at (4) and serves to break up the masses of paper stock so that they move easily down the sides of the bin and are subsequently conveyed out of the apparatus by the screw conveyor.

The dimensions of the apparatus can be varied at will so that any size of storage bin may be provided. From Figure 2, it is easy to see how the stock is moved out of the storage bin and eventually fed into the digester.

New Development in the Pulp Industry

THIS was the title of a paper that was read by Dr. Schwalbe at the 1925 meeting of the Pulp and Paper Chemists' and Engineers' Association in Germany.

In this paper, Dr. Schwalbe began with a discussion of the sulphate process and discussed the efforts that have been made to remove the disagreeable odors that are evolved in this manufacture. He also discussed the de Vains process and the Krais nitrate process. The active agent in the latter process is nitric acid which is formed by adding a small amount of sulphuric acid to saltpeter. The process is carried out without pressure. One essential feature is the regeneration of the expensive reagent. The process must be very carefully applied as there is always great danger that the fibers will be oxidized.

Particular attention was paid to the bleaching of paper pulp and recommended the use of high concentrations of bleach liquor with high densities of stock in the bleaching heater, the latter being as much as thirty per cent, as more dilute mixtures tend to cause the hydrolysis of the fibers. By allowing the highly concentrated bleach liquors to act for only a short time, all danger of injuring the fibers is avoided.

The question of the possibility of using catalysis in the bleaching operation was also discussed for the purpose of removing the natural coloring matters that are present in the fibers. Careful perusal of the work done in the textile industry along these lines were advised. Various special bleaching processes were described. A considerable portion of the paper was devoted to the process of purifying the bleached fibers for the purpose of eventual manufacture into cellulose esters; Der Papierfabrikant, 1925, pages 341-2.

Preliminary Treatment of Wood for Sulphite Digestion

IN THE sulphite digestion process, the contents of the digester are brought up to a temperature of 105 as quickly as possible and then they are allowed to remain at this temperature for several hours, whereat by the addition of further amounts of steam, the reaction temperature is made to rise eventually to 120 to 145 degrees C. The maintenance of the temperature for an extended period of time at 105 degrees C is for the purpose of causing the liquor thoroughly to impregnate the stock. It must, however, be mentioned that impregnating wood with a liquor impregnation is not complete even when the liquor has penetrated entirely through the wood. The digestion liquor must pass through a large number of cell membranes. But inasmuch as the cell membrances can absorb sulphurous acid as well as lime, the digestion liquor is gradually deprived of its active ingredients, and thereafter a liquor is made to penetrate the innermost parts of the wood chips, which liquor is not sufficiently concentrated. Then again in order that there is present within the internal structure of the wood a liquor which contains the proper percentage of sulphurous acid and lime, fresh liquor must constantly be prepared by the process of dialysis.

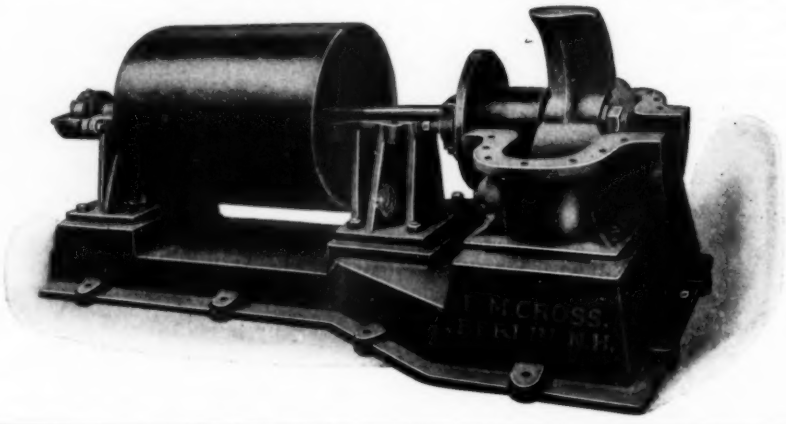
However, in the time that is usually allotted to the impregnation operation, it is impossible to attain a complete soaking of the wood with fresh sulphite liquor. The impregnation of the core of the wood ensues simultaneously with the disintegration of the fibers, and consequently partly at a high temperature. This brings about the disadvantageous condition that the external part of the pieces of wood has been digested, while the interior of the wood has not come in contact with sufficient of the digestion liquor chemicals to bring about disintegration. This then results in the formation of a resistant internal core of wood which cannot be reduced to the proper condition only after prolonged digestion. But when the core of the wood has been disintegrated, then it follows that the outer portions of the chips have been allowed to remain in contact with the digestion liquor for too long a time and hence are over-digested. The net result is the obtaining of a certain amount of over-cooked and under-cooked fibers.

According to Dr. Carl G. Schwalbe, who is the inventor of the process which is described in German Patent No. 410,762, this disadvantageous circumstance can be remedied when care is taken to see that the impregnation of the wood is complete. This can best be observed by the fact that the concentration of the digestion liquor in sulphurous acid and lime does not change any longer. This means that the adsorption process has been carried to a conclusion and a perfect equilibrium exists between the sulphite liquor and the wood chips.

For example, a straw stock is treated with sulphite liquor which contains 1.8 per cent of lime and 3.7 per cent of total sulphurous acid. The impregnation takes place at the ordinary temperature or at a moderately elevated temperature, about 50 degrees C., and lasts for a period of ten hours. Then the temperature is raised to 140 degrees C. and maintained at that point for two hours.

Paper Testing

AT THE recent meeting of the German Society of Paper Chemists and Technologists, considerable attention was paid to the matter of paper testing. The various processes which are employed in arriving at the quality and in determining the various properties of a paper were examined and discussed in detail. While no new methods were developed, a number of interesting thoughts were revealed which should be of interest to paper men everywhere.



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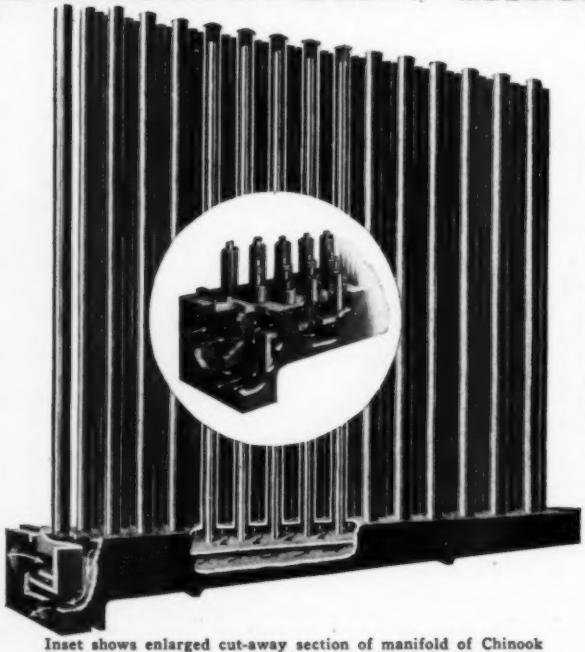

Inset shows enlarged cut-away section of manifold of Chinook Heater, illustrating tube-within-a-tube circulating principle. Steam enters manifold where arrows indicate, distributes through supply chamber rises in ⅜-inch pipe, is condensed in 1¼-inch pipe radiator, returning by gravity to condensation chamber and leaving heater where arrows indicate.

Shipped "Knocked Down"

Unlike all other pipe heating sections Chinook construction permits shipping the heaters "knocked down" to be assembled on the job, thus eliminating installation difficulties because of bulk and weight; in addition, there is no racking and straining of sections in handling and shipping with consequent leakage which is difficult to stop.

Because they are simple to assemble directly in position by placing the base casting first and then inserting the pipes the cost of installation is no more than setting and connecting a bulky assembled heater unit, especially where space and headroom for tackle and handling equipment is limited.

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Thus in testing a paper for tearing length and stretch, the relative moisture of the air in the testing room has a very important effect on the results obtained. The normal humidity of the air is taken as 65 per cent. The correct humidity must be secured either by means of moistening devices or else by drying the air by means of calcium chloride and the like. Multiplying factors have been developed which may be employed for correcting the results obtained at any humidity of the atmosphere to the standard humidity of 65 per cent.

The importance of the folding test was also emphasized, and it was mentioned that it is necessary to give attention to the adjustment of the tester at regular intervals, especially when it stands in a room which is not maintained absolutely dry and free from steam vapors. Mention is made of the Mullen tester which is used in our country.

Various apparatus have been constructed for testing special properties of special papers. The testing of blotting papers is described. A tester has been invented for determining this property of blotting papers which machine is said to give results which are free from all objections. The apparatus consists of a pair of rolls which run at low speed, but with a constant velocity, and between these rolls there are run strips of the blotting paper that is being tested together with a strip of a well sized paper, after a few drops of a standard ink have been allowed to fall on the latter from a height of two centimeters. Very good blotting paper will blot the ink drops without blurring them.

In the testing of filter paper, what is determined is the speed at which the liquid will penetrate it. This is accomplished in a special form of apparatus which allows a piece of the paper stretched over an opening to be subjected to a constant height of water and the time is measured that is required for a certain volume of water to pass through the filter paper. The actual filtering quality of the paper is determined by testing with a precipitate of barium sulphate prepared under different conditions from barium chloride and calcium sulphate.

Special papers are also tested for their perviousness to gases and air. Similarly in the case of certain printing papers, the transparency and translucency are also of importance. Thus it is desirable that printing does not show through the paper and this is particularly essential in envelope papers. The apparatus invented by Klemm for this purpose is described. The apparatus works on the principle of the interposition of a number of sheets of paper to prevent the light from a standard source from penetrating, and the degree of translucency is detemined by the number of sheets of paper which will entirely shut out the light.

Various other methods for determining properties of paper were also discussed, such as the "flotation method" for establishing the sizing quality of paper, methods for determining the spots in paper, methods for finding the percentage of various impurities, microscopical methods for examining the structural characteristics of the paper, its composition and the like, for establishing the capability of the fibers for being bleached, etc. Der Papierfabrikant, 1925, pages 358ff.

Black Lye from Soda Pulp and Its Behavior

THE regeneration of black lye that is recovered in the process of manufacturing pulp by the sulphate method is examined in a paper which was published in Acta Acad. Aboensis, Math. Phys., volume 2, Chem. Zentr., 1925, 1661-2.

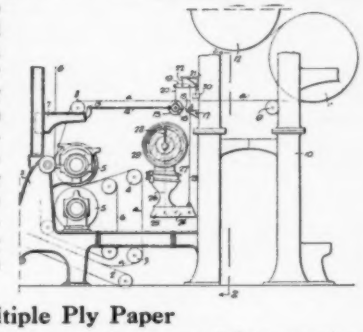
It is found that when the regeneration of the black lye is attempted by heating the liquor to a temperature of 350 degrees C. and under pressure, so as to remove the organic matter which is present as carbon and tarry substances, bad results are obtained, as the sodium sulphide that is present yields hydrogen sulphide. The process has been found impractical.

The experiments that are described in this article are concerned with black lye which is obtained when caustic soda alone is used in the digestion process. When pure solutions of sodium formate and sodium acetate were heated under pressure at a temperature of 350 degrees C. for a period of two hours, the acetate was practically unaltered, but the formate was transformed into sodium carbonate with the evolution of hydrogen, carbon monoxide, methane, etc.

When the black lye was similarly heated the acetate content rose from four to nine per cent. The influence of an increased content of acetate in the regenerated lye on the digestion process was investigated, and it was found that the permissible limit is fifteen grams of acetate per hundred cubic centimeters of solution. Accordingly a third of the regenerated lye must be withdrawn each time and replaced by lye which is free from acetate. The black lye contains about two grams of methyl alcohol per kilogram of conifer wood, but after heating under pressure, the methyl alcohol content rises to about fifteen grams or about five per cent of the lignin.

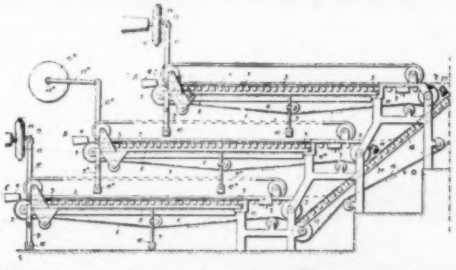
Weighing Paper

IN UNITED STATES Patent No. 1,538,615, there is described a process and apparatus for weighing paper while it is in the state of a paper web. The machine in which this is done contains two rollers which are spaced apart, and over which the web of paper travels. A weighing roller extends under the web of paper about midway between the two rollers. Indicating scales are attached to each end of the weighing roller for indicating the weight of each side of the web of paper.

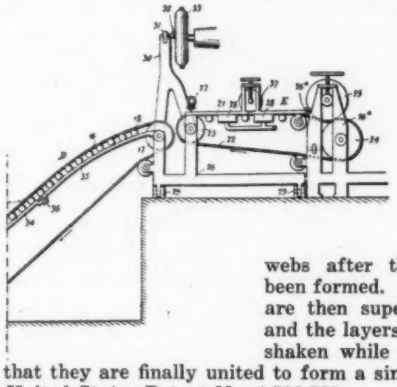


Multiple Ply Paper

IN MAKING a multiple ply paper by means of the apparatus which is shown in the accompanying illustration, the paper pulp is made to flow onto the web-forming aprons so as to make



a plurality of wet paper pulp webs. The aprons are shaken during the formation of the webs, and fluid is supplied to the



webs after they have been formed. The webs are then superimposed and the layers are then shaken while wet with the result that they are finally united to form a single sheet of paper. United States Patent No. 1,538,788.

Behavior of Calcium and Magnesium Bisulphite Liquors on Heating

INVESTIGATIONS on the capacity of hydrochloric acid being formed from the splitting of magnesium chloride and solutions of this chemical gave the following result. It was found that the hydrolysis of magnesium chloride at high concentrations was very slight. This pertained to concentrations as high as twenty-five per cent of the salt in solution. It is thought by the investigator, Dr. Schwalbe, that splitting of magnesium chloride in the liquor is enhanced by the presence of fibrous matter, and it would appear as if such an action did take place in the digestion of pulpwood by the sulphite process. Wochenblatt fuer Papierfabrikation, 1925.

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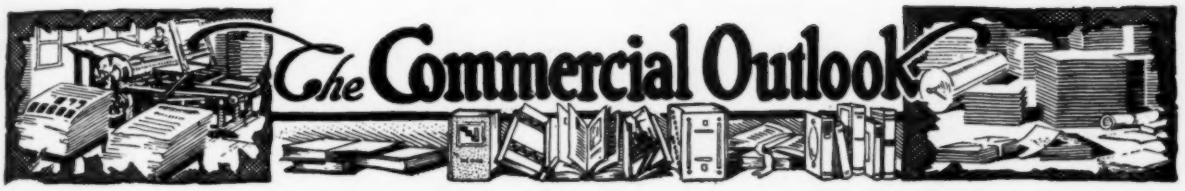


New York, July 1, 1925.

ACTIVITY in the paper industry continues on a somewhat limited scale. A seasonal slowing down of demand is noted in some kinds of paper; in fact, this condition is perceptible throughout the market with the exception of one or two divisions of the trade. Consumers in general are confining their purchasing to paper actually and directly needed, and since the summer is the time when requirements are at the lowest, the volume of orders shows a decrease to some extent.

However, the market is far from dull. Certain branches of the industry are favored with greater activity than is customary at this period of the year, which, of course, gives the situation as a whole a better complexion than otherwise would be apparent. Some groups of mills have a sizeable volume of orders on file and are maintaining production at close to capacity despite the advent of the usual quiet summer season; there are others which are securing a little more business than in the last several months. On the other hand, some classes of paper are noticeably affected by the summer dullness, demand for them has subsided materially, and manufacturers have curtailed production to keep pace with the current movement into consuming channels.

Prospects for the industry are encouraging, if not bright. Probably the most favorable factor is that consumers in general are carrying very little stock of paper of any kind. Buying in recent months; in fact, it can be said all of this year thus far, has been on a strictly conservative scale; few users of paper have considered anything concerning their requirements when placing orders other than immediately ahead. They have permitted manufacturers and jobbers "to hold the bag," as the saying is, evidently feeling that should they need larger amounts of paper they would be occasioned no trouble nor delay in acquiring the supplies desired, with the obvious result nearly all the paper shipped to consumers has gone almost directly into consumption. Therefore, everything is in favor of a considerable expansion of demand in the early autumn when general business picks up following the summer depression, because consumers necessarily will have to buy paper as their needs develop owing to the limited stocks they have on hand.

As a matter of fact, many in the trade look for a fairly active summer period, basing their views on the probability that numerous large users of paper will come into the market rather early so as to precede "the other fellow" and in anticipation of price advances which likely will occur in the fall. If such demand arises, it is quite probable the market will be fairly active during the warm weather months because there are indications that the routine demand will remain good throughout the summer, and should some of the big buyers appear to add to the usual activity, paper producer and merchants may experience much better business between now and the customary improvement in the fall than they expect.

One of the important market developments in June was the announcement that a large mill in Canada had notified customers of a reduction of $5 per ton to $65 f.o.b. mill in newsprint prices, effective January 1 next. This is the first definite movement in the United States or Canada toward lower print paper prices made this year, and it came rather as a surprise to most members of the trade who expected quotations would be maintained firmly and that if any cut was contemplated for 1926 no mention of it would be made until late in the current year. While the lower price will not apply in the instance in question until the first of next year, there is a feeling that this action by one of the Canadian manufacturers may force a reduction in price before the end of 1925 since it is admitted the reason for the price recession is the heavy increase in new tonnage coming into production in the latter part of this year and the purpose of manufacturers to put under contract as much of their 1926 production as possible. Therefore, some mills, it is believed, may reduce to the lower price level before the end of this year as an inducement to publishers to arrange contracts for 1926 tonnage.

Statistically, news print continues in a strong position. Figures for May show that production in the United States during that month amounted to 129,026 tons, and shipments to 126,487 tons. Production in Canada was 130,013 tons, and shipments 128,386 tons, making a total for the two countries of 259,039 tons, and shipments of 254,873 tons. Comparing production during the first five months of this year with the same period of each of the five previous years, the U. S. mills made about the same as in 1924, one per cent more than 1923, 12 per cent more than in 1922, 20 per cent more than in 1921, and slightly more than in 1920, while the Canadian mills produced 9 per cent more than in 1924, 21 per cent more than in 1923, 47 per cent more than in 1922, 96 per cent more than in 1921, and 70 per cent more than in 1920. The combined production of the U. S. and Canadian mills for the first five months of 1925 was 4 per cent more than in the corresponding period last year, 10 per cent over 1923, 27 per cent over 1922, 48 per cent over 1921, and 26 per cent over 1920.

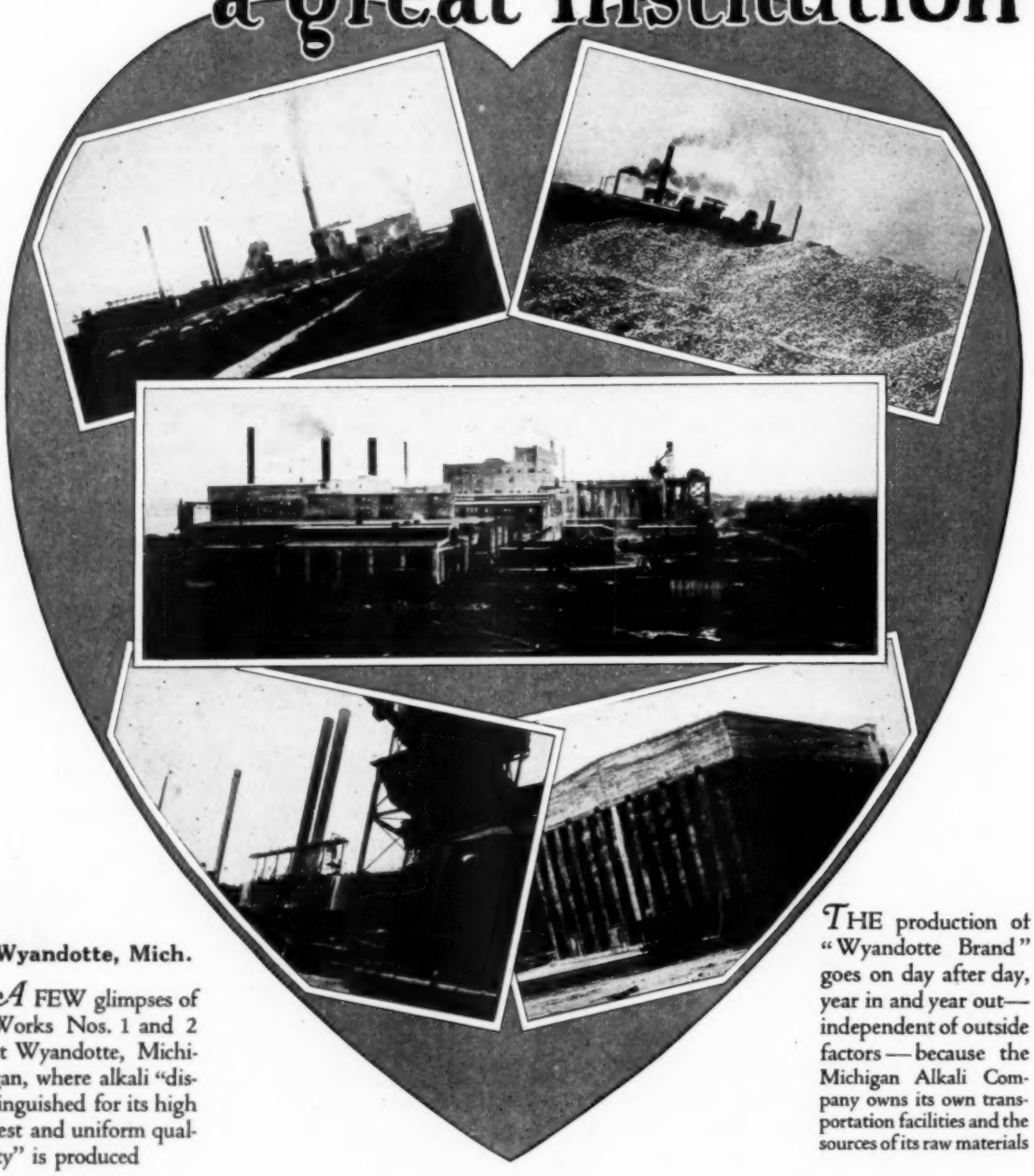
Reports of the Department of Commerce in Washington say that there has been a steady falling off in imports of news print into this country from Germany. On the other hand, the department reports that imports of news print from other European sources show an increase, shipments from Finland, Norway and Sweden for the first four months of this year being larger than in the corresponding time a year ago.

The movement of news print keeps up in good volume, although there has been a little slowing down reported in some quarters in the last several weeks. Publishers are reducing the size of their papers, owing to the summer season, yet from all indications consumption of print paper is holding up remarkably well, and mills are said to be maintaining production on a fairly large scale.

There has been a marked broadening of demand for box boards in the past few days. Consumers in general have shown greater interest and have increased their buying in sufficient volume to enable mills to speed up production somewhat. The occasion for the larger board demand is none other than the usual beginning of the period of activity in the board consuming trades at about this time of the year. Paper box manufacturers and other users of board are encountering more demand for their products, reflecting the larger movement of merchandise for fall and Christmas distribution, and consequently are in need of bigger amounts of board. It is reported some mills have booked so large a tonnage of orders recently they are holding out for higher prices for board; for example, they are refusing to accept additional orders at the low prices of $37.50 and $40 a ton delivered New York for plain chip but are demanding $45 for this kind of box board. The board situation should show further appreciable improvement since there is every indication the worst is over and that the past several months of depression in this branch of the papermaking industry is likely to have a rebound in much better business.

Fine papers are fairly active and steady in price. Mills up in New England are operating at a moderately good pace, and in certain individual instances are producing 100 per cent and are sold ahead. Coarse papers are quiet except for the usual development of routine demand.

The Heart of a great Institution



Wyandotte, Mich.

A FEW glimpses of Works Nos. 1 and 2 at Wyandotte, Michigan, where alkali "distinguished for its high test and uniform quality" is produced

THE production of "Wyandotte Brand" goes on day after day, year in and year out—independent of outside factors—because the Michigan Alkali Company owns its own transportation facilities and the sources of its raw materials

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Domestic Raw Materials

Papermaking Rags

This is the period of the year when demand for papermaking rags probably is at its lowest. Paper manufacturers with few exceptions are either engaged in compiling mid-year inventories or are preparing to do so, and for this reason they endeavor to keep stocks of raw material down as small as is advisable against current requirements. Consequently, demand for rags is rather narrow, and has been in the last several weeks. There has been activity in some parts of the trade, and, in fact, the general movement of rags into consuming channels has been fair, everything considered, for this time of the year, yet demand has lacked that snap which is a feature in busier periods and which causes price advancement.

The situation from a statistical standpoint shows little change of note. If anything, it would appear as if the rag market statistically is stronger, now that the spring and early summer are over and some line on the incoming supplies during that space of time has been obtained. It can be stated, and on the best of authority and on numerous concrete signs indicating the condition, that supplies of rags suitable for paper mills received during the spring season this year, when ordinarily rag collections throughout the country are at the zenith, were subnormally small. Dealers almost without exception state that not in a long time, possibly never before, have they seen such small amounts of rags come in from country sources, which situation, it is believed, is nothing else than a reflection of the increased use of cotton rags for other purposes. It is a fact that in these days of the automobile, when nearly every family owns a motor car, most of the household rags are saved for the auto, with the result the proverbial family rag-bag has very nearly disappeared. Also, there has been in the last several years a big increase in the use of cotton rags for wiping purposes in factories, shops, etc., in the place of cotton waste. Moreover, more rags are being ground up for shoddy purposes than formerly, owing to the high price of raw cotton. All of these factors have served to decrease the available supply of cotton rags for the papermaker, and spring collections which have come into the market this year have been far less than normal volume despite the comparatively high prices which have prevailed.

This is a situation which warrants a great deal of thought on the part of paper manufacturers. Fortunately indeed for the papermaker, Europe has been sending record-breaking supplies of papermaking rags to the United States; were this not true there is no saying where rag prices would have soared. Import statistics show that the movement of rags from across the Atlantic to the American market keeps up in good volume, which tends to offset in large measure the low level of domestic stocks.

Paper mills in common are purchasing rags in a cautious manner. Few are placing orders other than against direct requirements, even the roofing paper manufacturers who consume immense amounts of rags are buying only for periods of a month or two ahead. Apparently this policy has been adopted because of two reasons, one of which is that manufacturers realize should they buy rags promiscuously, prices would advance well above prevailing levels, and the other that most papermakers are not aware of what their requirements sometime ahead are likely to be and therefore are purchasing as their needs develop.

Demand for roofing rags has subsided and prices of this class of material have moved downward. However, at the lower level the market is exhibiting considerable firmness; it appears as if prices have settled on a basis which sellers regard as low enough, and a good deal of resistance to any further decline is apparent. No. 1 roofing rags are quoted around 2.50 cents per pound f.o.b. dealers' points, and No. 2 stock at about 2.25 cents. Old white rags are steady in price. Dealers ask 8 cents and higher for No. 1 repacked whites at shipping points, and 5.50 cents for No. 2 repacked. Repacked thirds and blues are quoted on a range of 3.75 to 4.25 cents per pound, depending on the quality of packing, while rough blues are bringing 2.60 to 2.80 cents at dealers' points, the latter having declined somewhat in sympathy with roofing rags.

A fairly consistent demand is reported for some kinds of new cuttings, which coupled with the fact that such rags are in light supply, makes for price firmness. At the same time, there is irregularity in quotations; for example, unbleached muslins are held for higher prices than No. 1 white shirt cuttings, dealers wanting 15 cents a pound for muslins, against 14 cents or slightly higher for shirt cuttings. Blue overall cuttings are quoted firmly at 11.50 to 11.75 cents a pound at shipping points, light silesias at 11.25 cents, O. D. khaki cuttings at 7 cents, white lawns at 13.50 cents, and washables at 8.50 cents.

Low grades for felt paper mills feature foreign rags. Dark colored cottons are quoted at about 2.40 cents per pound ex-dock New York, and linsey garments at 2.50 cents, with the probabilities favoring buyers getting some supplies of these rags for forward shipment from abroad at slightly cheaper figures.

Average quotations f.o.b. shipping points and ex-dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	14.00-14.50
White shirt cuttings, No. 2	10.50-11.00
Fancy shirt cuttings	10.50-10.75
Washables, No. 1	8.50- 9.00
Unbleached muslins	14.50-15.00
White lawns	13.50-14.00
Overall cuttings, blue	11.50-11.75
Black silesias	6.00- 6.50
Light flannelettes	12.50-13.00
Canton flannels, bleached	13.50-14.00
Canton flannels, unbleached	13.25-13.50
Shoe cuttings, bleached	13.00-13.50
Shoe cuttings, unbleached	12.00-12.50
Light silesias	11.00-11.50
O. D. khaki cuttings	7.00- 7.25
Mixed khaki cuttings	6.25- 6.50
Corduroy cuttings	6.00- 6.25
Cottonade cuttings	5.25- 5.50
Linens, No. 1 white, foreign	16.00-17.00
Light prints, foreign	7.75- 8.00
Old Stock—	
Whites, No. 1, repacked	7.50- 8.50
Whites, No. 2, repacked	5.00- 5.50
Whites, house soiled	3.50- 3.75
Whites, street soiled	3.00- 3.25
Lace curtains	6.00- 6.50
Thirds and blues, rough	2.60- 2.80
Thirds and blues, repacked	3.75- 4.25
Black stockings	4.50- 4.75
Cotton canvas, No. 1	5.75- 6.25
White cotton batting	3.75- 4.00
Roofing, No. 1	2.40- 2.60
Roofing, No. 2	2.20- 2.30
Dark colored cottons, foreign	2.35- 2.45
Blue linens, foreign	5.50- 6.00
Gray linens, foreign	6.00- 6.50
White linens, foreign	10.50-11.00
Light prints, extra, foreign	3.75- 4.00

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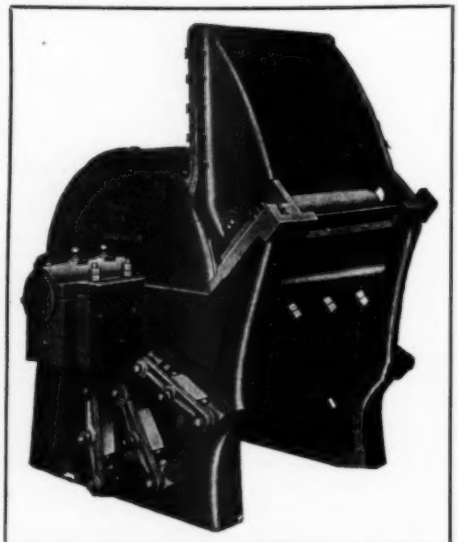
Built in six sizes with spouts ranging from 18" to 45" wide



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Because shredding in the Mitts & Merrill Gravity Feed Shredder expedites hydration in the beaters there is considerable saving made in power. Thus we see that the shredder here illustrated reduces costs while it is reducing paper stock.

We will be glad to furnish details upon request.

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Rope and Bagging

The outstanding feature in the old rope and bagging market is the brisk demand for roofing bagging and the high levels of price at which this material is selling. Reports say that some big orders have been in the market for bagging from felt paper mills, which have absorbed about all the supply available, so that buyers seeking additional lots have been obliged to meet stiff prices. Sales at close to 2 cents a pound f.o.b. and ex-dock New York have been noted, which price is surprisingly near to the prevailing value of roofing rags, and dealers are reported in a bullish frame of mind and holding firm for the full rates quoted. No. 1 scrap bagging is steady at around 2.60 cents per pound at shipping points. Gunny bagging is quoted at 3 to 3.25 cents f.o.b. shipping points for No. 1 domestic mill run gunny.

Domestic old manila rope is firm and meeting with a ready demand from paper manufacturers. On the other hand, imported rope seems relatively neglected and is quoted at prices far out of line with the domestic article. Dealers ask 7 cents a pound at shipping points for No. 1 manila rope of domestic origin and are getting this price without much difficulty, whereas sales of foreign No. 1 old rope have been reported down to 6 cents ex the dock at New York or other American Atlantic ports. Strings of all kinds are in good demand and firm in price.

F.o.b. shipping point and ex-dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	3.00-3.25
Gunny, No. 1 foreign	2.90-3.15
Scrap bagging, No. 1	2.50-2.75
Roofing bagging	1.85-2.00
Wool tares, heavy	2.75-3.00
Wool tares, light	2.65-2.85
Manila rope, No. 1 foreign	6.00-6.25
Manila rope, No. 1 domestic	6.75-7.00
Sisal strings	3.00-3.25
Mixed strings	1.75-2.00

Old Paper

After passing through one of the worst and longest periods of depression ever experienced in this commodity, old paper seems to be improving both in demand and in price. There is much better interest displayed by consumers, which doubtless is a reflection of increased activity in the box board market, and prices of some grades, more especially the low qualities, have recorded at least slight advances. Dealers continue to predict a sharp rise in waste paper values. They contend that the collection machinery of the industry has been so severely shattered by the lack of demand from paper and board mills for some time and by the non-profitable prices obtaining that it will require an appreciable period for packers to get their organizations back into condition to gather a normal supply of stock, and that therefore any increase in demand in the near future will result in an immediate jump in price. Moreover, they believe the demand is coming because they feel consumers cannot go on indefinitely buying in such small tonnage.

Shavings are quoted at 3.25 to 3.50 cents per pound at dealers' shipping points for No. 1 hard white, and around 2.80 cents for No. 1 soft white shavings. Ledger stock is fetching 1.30 to 1.50 cents a pound at shipping points, heavy No. 1 books 1.10 to 1.25 cents, and No. 1 manilas 70 to 85 cents a hundred pounds. A firm grade is old No. 1 kraft paper, which is selling at about 2.05 to 2.10 cents per pound at dealers' points, and white blank news is bringing 2 to 2.10 cents. Folded news is quoted 60 to 70 cents a hundred pounds f.o.b. shipping points, No. 1 mixed paper 50 to 60 cents, and common mixed 25 to 35 cents.

The following are prices f.o.b. shipping points:

	New York and Chicago.
Hard white shavings, No. 1	3.25-3.50
Hard white shavings, No. 2	2.75-3.00
Soft white shavings	2.65-2.85
Colored shavings	1.15-1.35
Heavy book, No. 1	1.10-1.25
Crumpled book, No. 1	.80- .90

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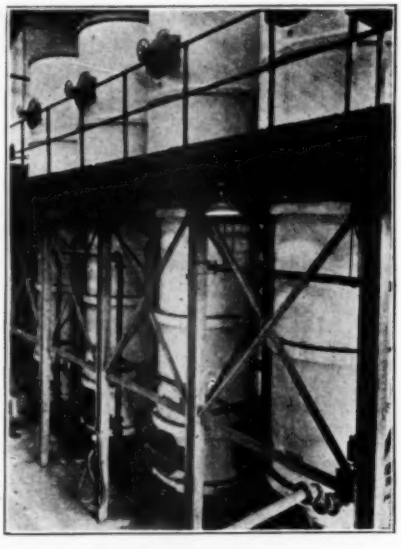

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Kraft, No. 1	2.00-2.10
Manilas, No. 1	.70- .85
White blank news	2.00-2.10
Over-issue news, No. 1	.70- .80
Folded news	.60- .70
Mill wrappings	.65- .75
Mixed paper, No. 1	.50- .75
Common paper	.25- .35

Mechanical Pulp

A rather bullish situation appears to be developing in mechanical pulp. Reports tell of a marked shortage of water in mill streams and reservoirs in some pulp grinding districts, especially in the Northwest, and prospects are the usual summer drouth is likely to have influence on ground wood prices earlier this year than normally. In fact, it is stated that consumers in some cases already have come into the open market to buy on a fairly large scale and that this demand has had a stiffening effect on quotations in the face of comparatively heavy stocks of ground wood held by some producers. The usual surplus of pulp has been piled up this spring and early summer by manufacturers in anticipation of having to curtail operations later on, yet indications are in spite of this sellers have the market much to their liking and that consumers are obliged to meet firm prices to secure supplies.

Domestic grinders quote around $30 a ton for prime spruce ground wood f.o.b. shipping points. Grinders in Canada are getting from $28 to $30 per ton, and in some instances higher, for ground wood at pulp mills, quotations depending on the air dry test and the haul to consuming centers. Some large-tonnage sales have been reported by Dominion producers around $29 a ton, and most manufacturers on the other side of the border are said to be now asking in excess of this price. Scandinavian ground wood is quoted at about $34 to $35 per ton ex-dock New York.

Chemical Pulp

Demand for domestic wood pulp is reported fairly active, and most producers in the United States are operating their plants on a scale moderately close to full production. One satisfying feature of the present market condition is that manufacturers as a rule are well fixed with contracts, some of them having the bulk of their output sold ahead for quite a while, which eliminates the necessity of them having to depend on the development of spot demand. Moreover, a factor having much to do with the underlying strength of the market is that a majority of pulp producers who consume a good part of their output either are using up themselves most of the pulp they manufacture or else are conserving any surplus over and above their requirements against their own future needs.

Prices display a good deal of steadiness; in fact, it can be said the tendency of quotations is upward. This reflects the fact that producers are not over-anxious about making further sales at present and that mill stocks are anything but excessively large. Bleached sulphite particularly is firm. Leading producers quote 4 cents a pound and higher for No. 1 bleached sulphite f.o.b. pulp mills, and about the lowest quotation named is 3.87½ cents. News grade unbleached sulphite is priced at about 2.60 to 2.70 cents at producing plants, while No. 1 unbleached sulphite is quoted at 2.75 to 3 cents. Domestic kraft pulp of No. 1 grade is selling at 3 cents and higher, and bleached soda pulp at 3.50 to 3.75 cents at pulp mills.

F.o.b. pulp mill quotations are as follows:

Bleached sulphite	3.87½-4.25
Easy bleaching sulphite	3.00 -3.10
Unbleached sulphite, No. 1	2.75 -3.00
News grade sulphite	2.60 -2.75
Soda pulp, bleached	3.50 -3.75
Mitscherlich, unbleached	3.25 -3.75
Kraft, No. 1	2.85 -3.10
Screenings, refined	1.40 -1.60

Chemicals

Demand for papermaking chemicals is chiefly of routine character, with the market lacking feature. Consumers for

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Soda Ash

Caustic Soda

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International Salt users enjoy worryless days insofar as their salt supplies are concerned. International Salt refineries are the last word in modern salt purification, and deliveries of this quality product are prompt. The business methods of the organization behind International Salt are on a par with the quality of the product.

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All standard sizes, weights and colors.

Handy Household Papers in Rolls
Ask and ye shall receive full information.

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High Grade Coated Book and Coated Lithograph Paper

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MANUFACTURERS
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New Papers

Writing—	
White rag	15-40
White sulphite	11-30
Colored rag	15-40
Colored sulphite	10-30
Ledger—	
White rag	17-40
White sulphite	13-30
Colored sulphite	12-30
Colored rag	16-40
Bonds—	
White rag	16-40
White sulphite	9-30
Colored sulphite	9-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 7.50
Machine finished	6.00- 6.75
English finished	6.25- 7.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	9.00-15.00
Newsprint—	
Rolls, contract	3.50- ....
Rolls, transient	3.65- ....
Sheets	4.00- 4.25
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .75
No. 1 manila, 24x36	.70- .75
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	5.50- 6.25
No. 2 Kraft	4.75- 5.50
Boards—	New York and Chicago
Solid news	47.50-52.50
Straw	45.00-50.00
Plain chip	40.00-45.00
White coated chip	55.00-60.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

Chemicals

(Continued from page 671)

the most part are protected by contracts and are evidently securing about all the supply of the various articles they need at present against contract, so that not much spot activity is apparent. Bleaching powder is quotably steady at 1.90 to 2.10 cents a pound at works, while casein is quoted around 12 cents per pound. Brimstone is firm at $18 to $19 per long ton f.o.b. mines. Little important change is reported in quotations anywhere in the list.

Average quotations f.o.b. works are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	3.75- 4.25
Bleaching powder	1.90- 2.10
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	11.50-12.50
Caustic soda, spot delivery	3.10- 3.20
China clay, domestic washed	12.00-16.00
China clay, foreign	15.00-20.00
Rosin, grade E	6.65- 6.75
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38
Starch, papermakers', in bags	3.40- 3.70
Talc (ton)	16.00-18.00

Increasing the Membership of A. P. & P. A.

Norman W. Wilson, vice president of the Hammermill Paper Company, and president of the American Paper and Pulp Association, avers that the American Paper and Pulp Association is becoming increasingly representative of all groups of the paper industry in the United States. Addressing a luncheon party of some fifty paper manufacturers at the Kalamazoo Country Club recently, Mr. Wilson spoke of the need for a strong central association in the paper industry. He said in part:

"At no time in the ever-continuous growth of the paper industry of the United States has there been such outstanding need for a strong central association as there is today. It seems to me that the greatest contribution which the men directing the affairs of the association can make to the paper industry and the American Paper and Pulp Association during this present year is to assist in every possible way in so increasing the membership of the association that it will be truly representative of every phase of the industry.

"The association is recognized today as never before at Washington and elsewhere throughout the country as the one organization which represents the entire paper industry. The several departments at Washington with which the paper industry has contact, the banks of the country, other great national trade associations, and the public generally, are turning to the association whenever accurate information as to our industry is needed. As an association, we have the confidence of these outside organizations, and we propose to so carry on the work of the association that this confidence will be deserved and maintained."

Charles A. Gordon, vice president of the Oxford Paper Company, is chairman of the Membership Committee of the American Paper and Pulp Association, and with the help of Dr. Hugh P. Baker, secretary, is making special efforts to interest nonmembers. The first results obtained by the committee under Mr. Gordon's leadership have resulted in the election to membership in the association of the following firms:

Brown Paper Mill Company, Monroe, La.; Foster Box Board Company, Utica, N. Y.; P. H. Glatfelter Company, Spring Grove, Pa.; Iroquois Pulp and Paper Company, Thomson, N. Y.; Jessup & Moore Paper Company, Philadelphia, Pa.; MacSim Bar Paper Company, Otsego, Mich.; Manistique Pulp and Paper Company, Manistique, Mich.; Munising Paper Company, Munising, Mich.; Tomahawk Kraft Paper Company, and Tomahawk Pulp and Paper Company, Tomahawk, Wis.; S. D. Warren Company, Boston, Mass.

Completing Plans for Safety Congress

Many directors of accident prevention work in the paper industry are planning to attend the Fourteenth Annual Safety Congress which will be held at Cleveland, Ohio, from September 28th to October 2nd, 1925.

Rear Admiral William S. Sims, who is president of the Newport, R. I., Safety Council, will address the congress on "Safety in the Nation" and Howard Coonley, president of the Walworth Manufacturing Co., who is also the president of the Massachusetts Safety Council, will speak on "The relationship of Safety to Operations in Modern Industry" on Monday morning, September 28th.

The B Q-INC. QUALITY PULPS

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"HAFSLUND BEAR"
Bleached Sulphite

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"FORSHAGA"
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"BAMBLE"
Extra Strong Kraft

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Howard Smith Paper Mills, Montreal, Quebec
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292 Madison Avenue NEW YORK

EXPORTS

Domestic exports of paper of all kinds from the United States showed a slight increase during April as compared with the preceding month, and also a gain over April last year, according to statistics issued by the United States Department of Commerce in Washington. Exports in April amounted in value to a total of $2,105,921, contrasted with $2,046,911 in March last, and with $2,080,897 in April, 1924. Total exports of paper of all kinds during the 10 months ended April last amounted in value to $19,365,564, showing a little decline from the shipments valued at $20,062,026 in the corresponding period a year ago.

Exports of newsprint paper in April last amounted to 3,855,116 pounds, valued at $168,423, compared with 3,183,618 pounds of a value of $157,186 in the same month last year. The bulk of these exports in April last were to Cuba, shipments to that country being valued at $73,381 and amounting to 1,887,975 pounds. Other large shipments in April were 703,885 pounds to the Philippine Islands, 583,574 pounds to South America, and 283,000 pounds to Canada.

Exports of uncoated book paper in April totaled 1,485,008 pounds, valued at $162,927, against shipments of 1,257,577 pounds of a value of $143,925 in the same month a year ago, of which the largest shipments in April last were to Cuba, amounting to 409,785 pounds.

The U. S. exported 47,248 pounds of kraft wrapping paper in April, valued at $4,557 against 31,644 pounds of a value of $2,864 in April, 1924, and also shipped abroad 2,471,939 pounds of other wrapping paper, valued at $184,129, compared with 2,147,272 pounds of a value of $197,888 a year ago. Writing paper exports in April totaled 263,452 pounds, valued at $37,043, contracted with 262,440 pounds of a value of $58,348 in April last year. Exports of paper and straw board in April were 2,760,021 pounds, valued at $125,961, against 6,294,900 pounds of a value of $275,864 in April, 1924.

IMPORTS

Wood Pulp

From every angle the market for imported wood pulp displays pronounced strength. Demand is of fair proportions, although most paper and board manufacturers are evincing chief interest in special mill brands of high quality pulps for forward shipment from abroad, indicating they are not concerned over immediate supplies or in future requirements of the ordinary grades of pulp, but are more desirous of covering their wants ahead in the particular brands which they consume and which, it is admitted generally, may become quite scarce later in the year.

Reports from abroad tell of firmness in the markets there. Scandinavian producers are well sold up, it being estimated that mills in Sweden are about 80 per cent committed on their production for this year, and advices state they are encountering excellent demand from various European consuming sources, not alone from papermakers but also from manufacturers of artificial silk. Therefore, firm quotations are named to American buyers, and in some instances the tendency of pulp prices is upward unmistakably. Only in rare cases is pulp being secured from abroad at prices concessions. It is stated that German mills are, in some instances, accepting orders from the United States at slightly below the prices they quote, but that it is a hard matter to effect purchases in Scandinavia at other than full-quoted rates.

Imports into the U. S. continue comparatively large. Steamers arriving at New York and other American Atlantic ports during the last month have brought appreciably heavy amounts of pulp, the great bulk of which, however, has been against contracts and therefore sold prior to shipment from primary sources. The receipt of these supplies has enabled consumers here to let down in their buying to some extent but otherwise has had no visible influence on the market.

According to U. S. Department of Commerce figures, imports of chemical wood pulp into the United States in April were a good deal less than in the preceding month, amounting to 79,639 long tons, valued at $5,030,574, compared with imports of 107,865 tons of a value of $6,674,021 in March last, and 56,206 tons of a value of $3,532,029 in April, 1924. April importations, in fact, were the smallest of any month this year up to that time. The total imports for the first four months of 1925 amounted to 407,702 tons, giving a monthly average of 101,925 tons, contrasted with a monthly average of 80,921 tons imported in the corresponding time a year ago.

Imports of groundwood in April were 19,411 long tons, making a total for the first four months of this year of 81,945 tons—a monthly average of 20,486 tons, against an average of 17,026 tons monthly in the same period of 1924.

Bleached sulphite shows a strengthening price trend. In fact, some import houses have advanced quotations on this class of pulp slightly. Grades which were selling a short time ago at 4 cents a pound or thereabouts ex-dock New York are now quoted generally at 4.15 to 4.25 cents. In some cases importers report they have no prime bleached sulphite of Scandinavian origin for sale at less than 4.15 cents on the dock. Prime strong unbleached sulphite is firm at 2.80 to 2.85 cents ex-dock New York, with some mill brands quoted at 2.90 and up to 3 cents. Swedish kraft is quoted strongly at around 3 cents on the dock, and sales of extra quality kraft have been reported at as high as 3.20 cents. Easy bleaching sulphite is firm at 3 cents or higher. Scandinavian ground wood is quoted on an average price of about $34 per ton ex-dock at American Atlantic ports.

Receipts at the port of New York in June and current market quotations, ex-dock New York, follow:

Bleached sulphite, No. 1	3.90- 4.50
Unbleached sulphite, strong, No. 1	2.80- 3.00
Unbleached sulphite, No. 2	2.60- 2.80
Easy bleaching sulphite	2.90- 3.15
Mitscherlich unbleached, genuine	3.00- 3.25
Mitscherlich unbleached, ordinary	2.65- 2.80
Kraft, standard Swedish	3.00- 3.20
Groundwood, per ton	33.00-35.00

Castle & Overton, 1,500 bls. from Larvik and 680 from Hamburg; Corn Exchange National Bank, 4,000 bls. from Larvik; Nilsen, Lyon & Co., 2,000 bls. from Larvik; Guaranty Trust Co., 22,501 bls. from Larvik; Ira L. Beebe & Co., 5,685 bls. from Bremen; Lagerloef Trading Co., 341 bls. from Bremen and 833 from Stockholm; Tidewater Paper Mills Co., 25,464 bls. groundwood from Liverpool, N. S., 12,084 from Weymouth and 9,027 from Canadian ports; Scandinavian Pulp Agency, 10 bls. from Gothenburg and 2,750 from Sundsvall; Chemical National Bank, 600 bls. from Oslo; E. M. Sergeant Co., 1,000 bls. from Oslo and 656 from Gothenburg; Price & Pierce, 4,325 bls. from Gothenburg; Mechanics & Metals National Bank, 500 bls. from Larvik; Parsons & Whittemore, 2,000 bls. from Gothenburg; Pagel, Horton & Co., 6,600 bls. from Husum and 1,750 from Gefle; Buck, Kaier & Co., 800 bls. from Bremen; A. P. W. Paper Co., 22,469 bls. from Sheet Harbor, N. S.; International Acceptance Bank, 140 bls. from

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Antwerp and 140 from Rotterdam; Bulkley, Dunton & Co., 1,875 bls. from Gefle and 2,500 from Soderhamm; Hartig Pulp Co., 625 bls. from Gefle and 250 from Sundsvall; National City Bank, 6,000 bls. from Sundsvall; J. Andersen & Co., 1,600 bls. from Sundsvall and 2,610 from Greaker; Bank of Montreal, 3,107 bls. from Canadian ports; Central Union Trust Co., 125 bls. from Greaker; Chase National Bank, 1,550 bls. from Greaker; Borregaard Co., 75 bls. from Oslo; W. Hartmann & Co., 600 bls. from Hamburg; Merchants National Bank of Baltimore, 750 bls. from Greaker; Johaneson, Wales & Sparre, 750 bls. from Sundsvall; Order, 2,170 bls. from Stockholm, 12,475 from Weymouth, 300 from Harnosand and 1,470 from Trieste.

Paper Stock

Despite a slowing down of demand for some materials, importations of papermaking stock into the United States during June kept up on a fairly heavy scale, judging from the arrivals through the port of New York. Some big shipments of rags were received, and imports of old rope and bagging were moderately large. Imports of all kinds of papermaking stock through the port of New York in June, with names of consignees, compiled from manifests of steamers reaching that port during the month, were as follows:

Old Rope

Brown Bros. & Co., 1,617 coils and 621 bls.; A. E. Rittwagen, 70 bls.; W. Schall & Co., 81 bls. and 23 coils; Stone Bros. & Co., 55 bls.; Bankers Trust Co., 39 bls.; New York Trust Co., 249 coils and 56 bls.; International Purchasing Co., 94 bls. and 50 coils; Ellerman's Wilson Line, 176 coils; N. E. Berzen, 8 bls. and 82 coils; Chemical National Bank, 11 bls.; William Steck & Co., 29 bls.; E. J. Keller Co., 42 bls.; Order, 195 bls. and 275 coils.

Old Bagging

J. J. Patricof, 231 bls.; Maurice O'Meara Co., 67 bls.; Mechanics & Metals National Bank, 272 bls.; E. Butterworth & Co., 694 bls.; Anglo-South American Trust Co., 147 bls.; Goschens & Cunliffe, 32 bls.; L. H. Abenheimer, 153 bls.; G. M. Graves Co., 99 bls.; A. W. Fenton, Inc., 179 bls.; International Acceptance Bank, 430 bls.; Brown Bros. & Co., 100 bls.; British Bank of South America, 40 bls.; William Steck & Co., 115 bls.; E. J. Keller Co., 1,432 bls.; Order, 1,164 bls.

Rags

E. J. Keller Co., 4,012 bls.; S. Birkenstein & Sons, 134 bls.; Atterbury & McKelvey, 174 bls.; Robert Bishop Mfg. Co., 198 bls.; V. Galaup, Inc., 126 bls.; A. H. Searle, 81 bls.; Stone Bros. Co., 1,127 bls.; M. Ambrosio, 10 bls.; Salomon Bros. & Co., 458 bls.; S. Silberman Co., 48 bls.; Barowsky & Co., 26 bls.; Katzenstein & Keene, 554 bls.; Maurice O'Meara Co., 354 bls.; Albion Trading Co., 207 bls.; Pearl Waste Material Co., 4 bls.; G. M. Graves Co., 523 bls.; Paul Berlowitz, 119 bls.; Castle & Overton, 85 bls.; A. Joensson & Co., 22 bls.; E. Austin & Sons, 319 bls.; J. J. Patricof, 67 bls.; Atterbury Bros., 32 bls.; E. Butterworth & Co., 293 bls.; Chapal Freres, 10 bls.; Furness, Withy & Co., 104 bls.; Atlas Waste Mfg. Co., 219 bls.; Darmstadt, Scott & Courtney, 196 bls.; The Barrett Co., 8 bls.; American Wool Stock Co., 104 bls.; Daniel M. Hicks, Inc., 124 bls.; National City Bank, 3,175 bls.; Mechanics & Metals National Bank, 1,185 bls.; International Acceptance Bank, 1,107 bls.; Fidelity International Trust Co., 549 bls.; New York Trust Co., 319 bls.; Chemical National Bank, 684 bls.; National Bank of Commerce, 406 bls.; Baltimore Trust Co., 598 bls.; Guaranty Trust Co., 479 bls.; Irving Bank-Columbia Trust Co., 581 bls.; Philadelphia National Bank, 20 bls.; State Bank, 432 bls.; Bankers Trust Co., 610 bls.; Anglo-South American Trust Co., 399 bls.; Central National Bank, 36 bls.; Garfield National Bank, 205 bls.; First National Bank of Boston, 13 bls.; National Bank of Cleveland, 399 bls.; Equitable Trust Co., 33 bls.; Kidder-Peabody Acceptance Corp., 131 bls.; R. F. Downing & Co., 69 bls.; Brown Bros. & Co., 3,026 bls.; A. W. Fenton, Inc., 4,592 bls.; Goldman, Sachs & Co., 867 bls.; Amsinck, Sonne & Co., 203 bls.; W. Schall & Co., 193 bls.; Order, 6,126 bls.

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Denver	New York City	San Francisco
Duluth	Norristown, Pa.	Wilkes-Barre

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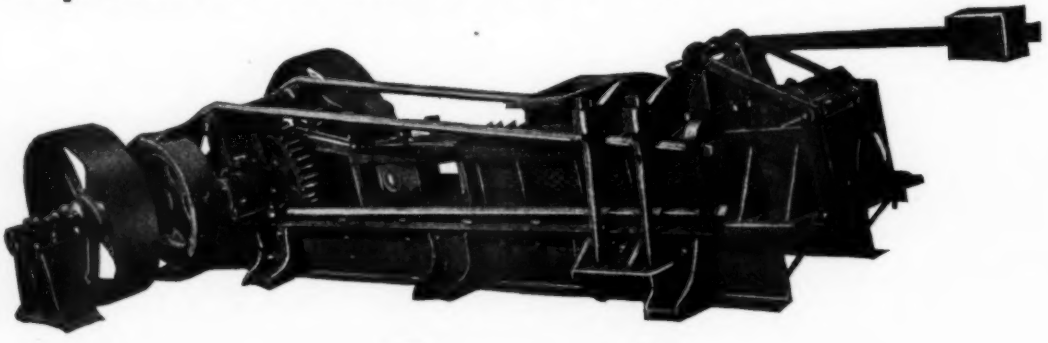

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Miscellaneous Paper Stock

Anglo-South American Trust Co., 1,039 bls.; Maurice O'Meara Co., 27 bls.; Amsinck, Sonne & Co., 52 bls.; Mechanics & Metals National Bank, 614 bls.; Brown Bros. & Co., 185 bls.; Hughes-Fawcett Co., 16 bls.; National Bank of Philadelphia, 36 bls.; J. Cohen & Son Co., 53 bls.; Darmstadt, Scott & Courtney, 65 bls.; W. Schall & Co., 181 bls.; National City Bank, 450 bls.; W. Hughes & Co., 41 bls.; Salomon Bros. & Co., 47 bls.; R. M. Gray, Inc., 237 bls. and 20 coils; Irving Bank-Columbia Trust Co., 82 bls.; I. Abela & Co., 135 bls.; International Acceptance Bank, 130 bls.; E. Butterworth & Co., 57 bls.; E. J. Keller Co., 221 bls.; C. R. Spence & Co., 18 bls.; Equitable Trust Co., 146 bls.; Goschens & Cunliffe, 59 bls.; Order, 572 bls.

Paper

Imports of paper into the United States during June were of fairly large volume, if the receipts through the port of New York in that month may be taken as a criterion. Some sizable lots of wrapping and printing paper arrived, and at least normal amounts of cigarette, filter, hanging and other grades were received.

During April the United States imported paper of all kinds to the value of $9,974,204, compared with $10,587,347 in the preceding month and with imports valued at $9,956,078 in April, 1924. Imports of standard newsprint in April totaled 247,345,832 pounds, valued at $8,763,214, against 223,887,721 pounds of a value of $8,590,359 in the same month last year. Imports of kraft wrapping in April amounted to 1,364,632 pounds, valued at $57,671, against 2,497,246 pounds of a value of $91,964 in April a year ago. Hanging paper imports in April were 463,170 pounds, cigarette paper 584,014 pounds, writing paper 336,281 pounds, photographic paper 232,862 pounds, tissue paper 208,438 pounds, and pulp and paper board 10,283,670 pounds.

Imports of paper of all kinds through the port of New York in June follow, these data being taken from the manifests of vessels arriving at that port during the month:

Printing

Irving Bank-Columbia Trust Co., 1,177 rolls from Hamburg and 46 rolls from Antwerp; International Forwarding Co., 35 cs. from Antwerp and 49 cs. from Rotterdam; B. F. Drakenfeld & Co., 85 cs. from Liverpool; Perry, Ryer & Co., 336 cs. from Glasgow; Paper House of Pennsylvania, 81 cs. from Bremen; New York Evening Graphic, 474 rolls from Three Rivers, Can.; Titan Shipping Co., 14 cs. from Southampton and 10 cs. from Havre; Maurice O'Meara Co., 5 cs. from Stockholm; Chemical National Bank, 75 rolls from Rotterdam; E. Dietzgen & Co., 41 cs. from Hamburg; Leonhardt & Brush, 110 rolls from Hamburg; New York & Hauseatic Corp., 104 bls. from Hamburg; National City Bank, 30 cs. from Hamburg; P. Puttmann, 3 cs. from Antwerp; P. C. Zuhlke, 112 cs. from Antwerp; Oxford University Press, 18 cs. from Liverpool; J. P. Heffernan Paper Co., 517 bls. from Trieste; Perkins-Goodwin Co., 18 cs. from Glasgow and 85 bls. from Trieste; C. Steiner, 62 cs. from Rotterdam; Martin & Bechtold, 9 cs. from Bremen; Order, 2,642 rolls from Bremen, 1,767 bls. from Three Rivers, 1,732 rolls from Stockholm and 45 bls. from Trieste.

Wrapping

Chemical National Bank, 239 rolls from Hamburg; E. Dietzgen & Co., 23 cs. from Hamburg; Marrison Machiine Co., 24 cs. from Havre; Okonite Callendar Cable Co., 374 rolls from London; Universal Paper Co., 334 rolls and 61 bls. from Gothenburg; Martin Walsh, Inc., 27 rolls from Gothenburg; Thomas Barrett & Son, 117 bls. from Gothenburg; J. P. Heffernan Paper Co., 163 bls. from Gothenburg and 1,849 bls. from Hamburg; Gilbert Paper Co., 105 bls. and 68 roils from Gothenburg; Crepe Kraft Paper Co., 60 rolls from Gothenburg; Borregaard Co., 95 bls. and 71 rolls from Gothenburg; Irving Bank-Columbia Trust Co., 484 bls. from Gothenburg; C. G. Vinans & Co., 1,394 rolls and 74 bls. from Gothenburg; Arkell Safety Bag Co., 88 bls. and 217 rolls from Gothenburg; F. C. Strype, 12 cs. from Rotterdam and 58 rolls and 5 cs. from Antwerp; Wilkinson Bros. & Co., 14 cs. from Rotterdam; In-

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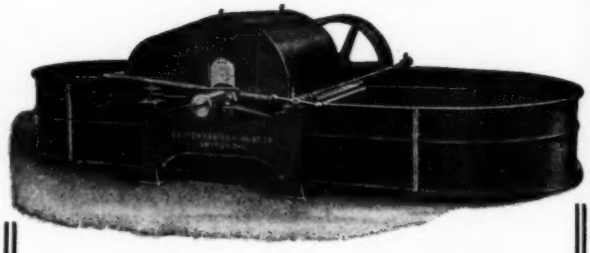

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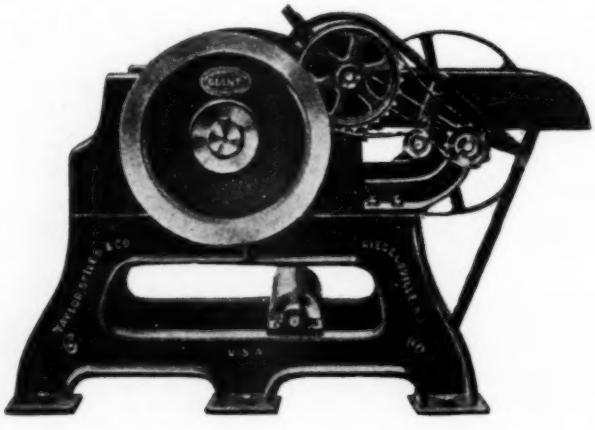

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ternational Acceptance Bank, 71 bls. and 52 rolls from Hamburg; Blauvelt-Wiley Paper Mfg. Co., 145 bls. from Glasgow; W. Hartmann & Co., 240 bls. from Trieste; British-American Tobacco Co., 72 rolls from Antwerp; Chatham & Phoenix National Bank, 41 rolls from Hamburg; Order, 127 cs. from Antwerp and 98 bls. from Hamburg.

Cigarette

R. J. Reynolds Tobacco Co., 1,820 cs. from St. Nazaire; DeManduit Paper Corp., 718 cs. from St. Nazaire; F. P. Gaskell & Co., 28 cs. from Havre; Standard Products Corp., 265 cs. from Havre; American Tobacco Co., 1,950 cs. from Bordeaux; Surbrug Co., 16 cs. from Havre; M. Spiegel & Sons, 3 cs. from Bordeaux; Zorro Tobacco Co., 25 cs. from Lisbon; P. J. Schweitzer, 100 cs. from Genoa; Order, 4 cs. from Barcelona.

Writing

Globe Shipping Co.., 28 cs. from Bremen; Guibont Freres & Co., 24 cs. from Havre.

Drawing

E. Dietzgen & Co., 32 cs. from Rotterdam, 118 cs. from Hamburg and 4 cs. from London; Titan Shipping Co., 20 cs. from Havre and 12 cs. from Southampton; Leonhardt & Brush, 36 rolls and 44 cs. from Hamburg; Keuffel & Esser Co., 10 cs. from London, 16 cs. from Rotterdam and 75 rolls and 10 cs. from Hamburg; Favor, Ruhl & Co., 7 cs. from London.

Filter

H. Reeve Angel & Co., 29 cs. from London and 99 bls. from Bordeaux; Orbis Products Trading Co., 40 bls. from Bordeaux; Taiyo Trading Co., 4 cs. from Nagoya; E. Fougera & Co., 92 cs. from Bordeaux; A. Giese & Son, 30 bls. from Bordeaux; J. Manheimer, 151 bls. from Southampton.

Tissue

United American Lines, 3 cs. from Liverpool; Iwai & Co., 12 cs. from Kobe; F. C. Strype, 33 cs. from Liverpool; Meadows, Wye & Co., 4 cs. from Liverpool; G. W. Sheldon & Co., 69 cs. from London.

Photo

Globe Shipping Co., 247 cs. from Bremen; F. Henjes, Jr., 57 cs. from Bremen; Gevaert Co., of America, 32 cs. from Antwerp; P. Puttmann, 135 cs. from Antwerp; F. G. Prager & Co., 52 cs. from Hamburg; P. C. Zuhlke, 287 cs. from Antwerp; Order, 78 cs. from Antwerp.

Hanging

C. A. Haynes & Co., 139 cs. from London; F. J. Emmerich & Co., 4 bls. from London, 12 bls. from Liverpool and 18 bls. from Hamburg; W. H. S. Lloyd & Co., 144 bls. from Liverpool; G. J. Huschken & Co., 4 bls. from Hamburg; A. C. Dodman, Jr., & Co., 4 bls. from Southampton and 5 bls. from Liverpool; Order, 69 rolls from Stockholm.

Board

Adrian Vuyck, 1,238 rolls from Rotterdam; D'Orsay Perfumery Co., 8 cs. from Havre; O. M. Baxter, Inc., 37 cs. from Gothenburg; Fibre Case & Novelty Co., 21 bls. from Gothenburg; Coty, Inc., 4 cs. from Havre; Metropolitan Import & Mfg. Co., 103 cs. from Hamburg; Bendix Paper Co., 41 cs. from Hamburg; American Express Co., 70 bls. from Hamburg; Friedman & Co., 12 cs. from Hamburg; Vivaudou, Inc., 10 cs. from Havre.

Miscellaneous

F. C. Strype, 10 cs. from Rotterdam; S. Gilbert, 12 cs. from Rotterdam; Overton & Co., 9 cs. from Bremen; Franco-American Importing Co., 88 cs. from Southampton; Japan Paper Co., 3 cs. from London, 11 cs. from Havre, 43 cs. from Genoa and 3 cs. from Barcelona; J. A. Hearn & Son, 6 cs. from Havre; L. A. Consmiller, 10 cs. from Bremen; F. L. Kraemer & Co., 9 cs. from Bremen; A. M. Capens Sons, 3 cs. from Havana; Whiting-Patterson Co., 31 cs. from Southampton and 15 cs. from Hamburg; F. J. Lissman & Co., 11 cs. from Genoa; C. W. Williams & Co., 9 cs. from Antwerp; Borden & Riley Paper Co., 13 cs. from Antwerp; International Forwarding Co., 12 cs. from Rotterdam, 4 cs. from Hamburg and 5 cs. from Havre; Phoenix Shipping Co., 3 cs. from Bremen.

New Sand Filter

A SPECIAL filter for paper mills, producing all the results the paper manufacturer desires. It is a modification of the well known Hungerford filter adapted to paper mill use. It is constructed of concrete, strictly wrought iron pipe, brass strainers and especially prepared silica sand. It is as durable and efficient as can be built at any cost. It can be sold at a very low figure.

This filter gives perfectly clear water, washes thoroughly, does not require renewal of the sand bed, is absolutely reliable in the performance of its duty and requires a minimum amount of attention.

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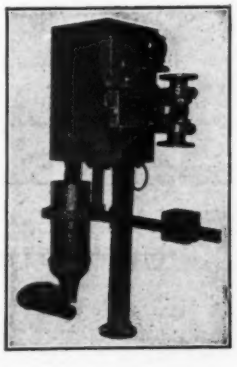

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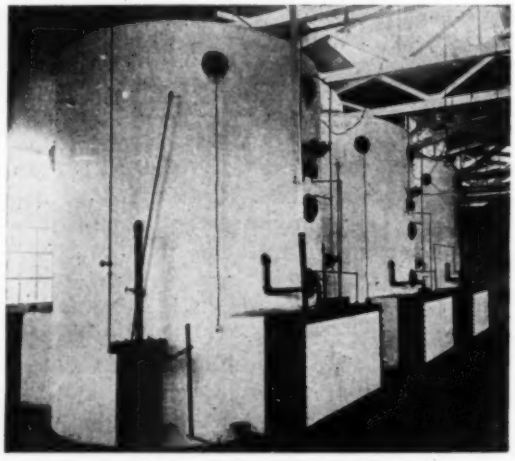

Triple effect illustrated above was installed fourteen years ago and is still going strong. As a result of its excellent work concentrating soda black liquor we have sold to the same concern sixteen large multiple effect evaporators.

FIFTY-EIGHT per cent of orders for Zaremba Evaporators are repeats. This is not due to superhuman salesmanship, but to the fact that they are designed to exactly suit conditions and are carefully constructed.

As a result Zaremba Evaporators have acquired an enviable and deserved reputation for efficiency, durability and reliability.

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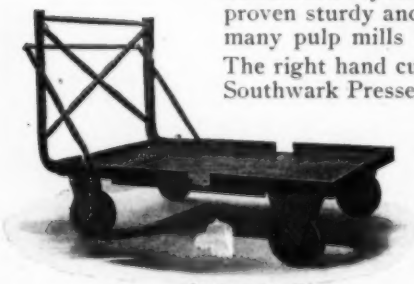

Southwark Pulp Truck, for Use with Presses Shown at the Right. Saves Time and Labor

Southwark Hydraulic Presses for dehydrating pulp have proven sturdy and efficient machines in every one of the many pulp mills where we have installed them.

The right hand cut shows an installation of four 600-ton Southwark Presses in a large pulp and paper mill. These presses are designed for use with Southwark Pulp Trucks, the trucks are loaded and run under the press, the pulp being compressed directly on the truck.

This feature gives fast operation, saves labor and eliminates curbs, boxes or other containers on the press.

Four 600-Ton Southwark Pulp Presses, Minnesota & Ontario Paper Co., International Falls, Minn.

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American Woods for Paper Making

Investigations made by the Forest Products Laboratory, U. S. Forest Service, Madison, Wis., show that, while only five or six kinds of wood are extensively used in the paper and pulp industry, many others could be utilized by making slight modifications in the standard pulping processes. This conclusion was reached by thorough laboratory trials, details of which are obtainable from the laboratory at Madison, Wis.

The Laboratory lists all possible woods as follows:

Softwoods

SPRUCES. All spruces are suitable for pulping by any process. All make high quality pulp.

HEMLOCKS. Western hemlock is very similar to spruce in its pulping qualities. In the groundwood or mechanical pulping process it requires more power than spruce to yield pulp of the same strength. Eastern hemlock is not so suitable for groundwood, and chemical pulps from it are darker, require more bleach, and are usually weaker than spruce pulps.

FIRS. All true firs are suitable for pulping by any process. Red fir gives rather dark sulphite and mechanical pulps, and its sulphate is more difficult to bleach than is spruce sulphate. The other firs are as readily pulped by any process as spruce is, and the pulps obtained are comparable to spruce pulps.

PINES. Lodgepole, western yellow, white, sugar, limber, and pinon pines all make good mechanical pulps. The other pines tested are too dark or contain too much pitch to be well suited to the groundwood process. Jack, loblolly, lodgepole, Norway, pond, sand, and scrub pines, by slight modifications of the cooking process, can be made into good sulphite pulp with reasonable bleach consumption. With the other pines uniformity of digestion is more of a problem. All the pines reduce readily in the alkaline (soda and sulphate) processes, and all bleach satisfactorily under proper conditions.

CYPRESS, DOUGLAS FIR, LARCHES, REDWOOD, AND RED CEDARS. None of these woods are suitable for groundwood. They are much more difficult to pulp by the sulphite process than hemlock, and the bleach consumption is barely within the range of commercial feasibility. They all may be reduced by alkaline processes to pulps not quite so strong but otherwise comparable to pine pulps. Redwood and the red cedars are too light weight to make their use practical.

WHITE CEDARS. White cedars reduce readily by all processes. The pulp yield per cord of wood is very small, however, since it is proportional to the weight of the wood. As pulpwood is bought on a cord basis, the white cedars probably would not prove acceptable to the industry.

Hardwoods

Hardwoods are not well adapted to the manufacture of mechanical pulp because of the excessive power required to grind them.

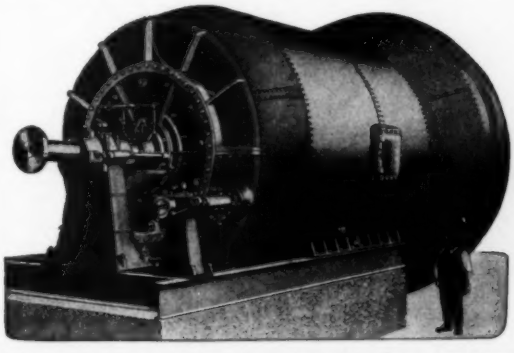
All hardwoods can be reduced by the soda process, and the pulp can be used in conjunction with spruce sulphite or some other long fibered stock in the manufacture of book and similar grades of paper. Basswood and aspen are pulped most easily. Red alder, balsa chestnut (after tannin extraction), elms, soft maples, and willows all pulp fairly easily. Ash, birches, beech, buckeye, butternut, catalpa, gums, hackberry, magnolias, mangrove, and hard maples are rather difficult to pulp, but some of them are used commercially. Hickory, locust, oaks, and sassafras are difficult to pulp, and generally impractical.

Some of the hardwoods can be readily pulped by the sulphite process and made into book and similar grades of paper with small bleach consumption. Among them are ash, aspen, birches, butternut, most elms, gums, hackberry, hickory, magnolias, maples, sycamore, and willows. Hardwoods that are difficult to pulp by the sulphite process because of structural irregularities or the presence of extractive materials are basswood, buckeye, catalpa, chestnut, locust, oaks, red gum, sassafras, and slippery elm.

Recent trials at the Forest Products Laboratory give promise that a number of hardwoods, including aspen, beech, birch, cottonwood, black gum, tupelo gum, maple, and other light-colored woods can be reduced by a combination of a chemical and a mechanical process to a pulp well suited for the manufacture of the lower grades of print paper.

LEFFEL

TURBINE WATER WHEELS



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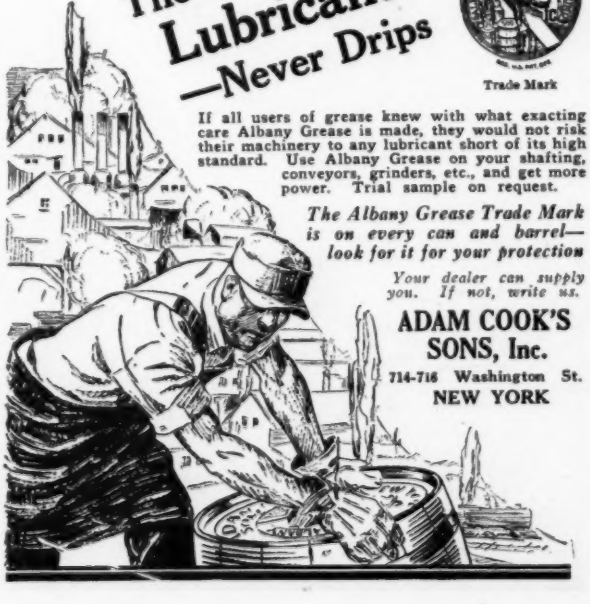

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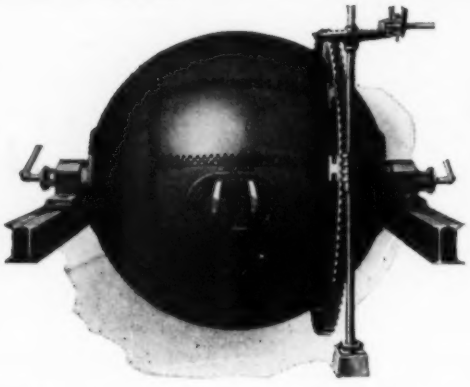

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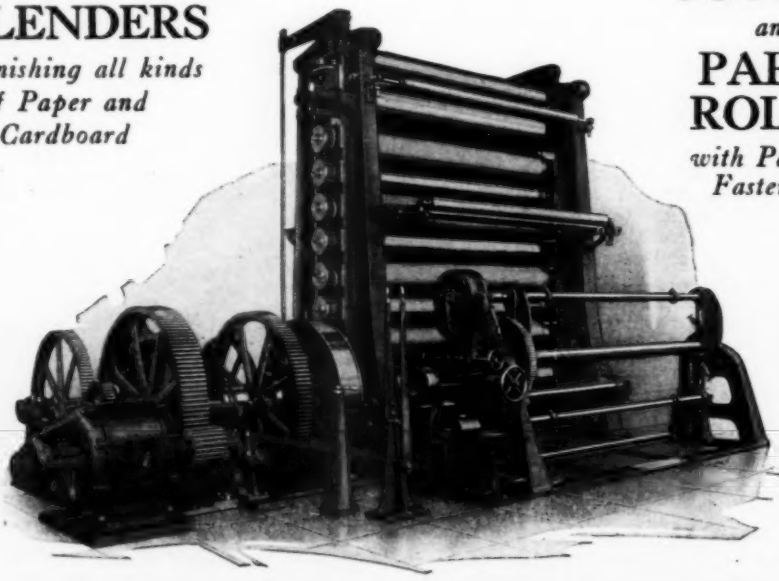

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